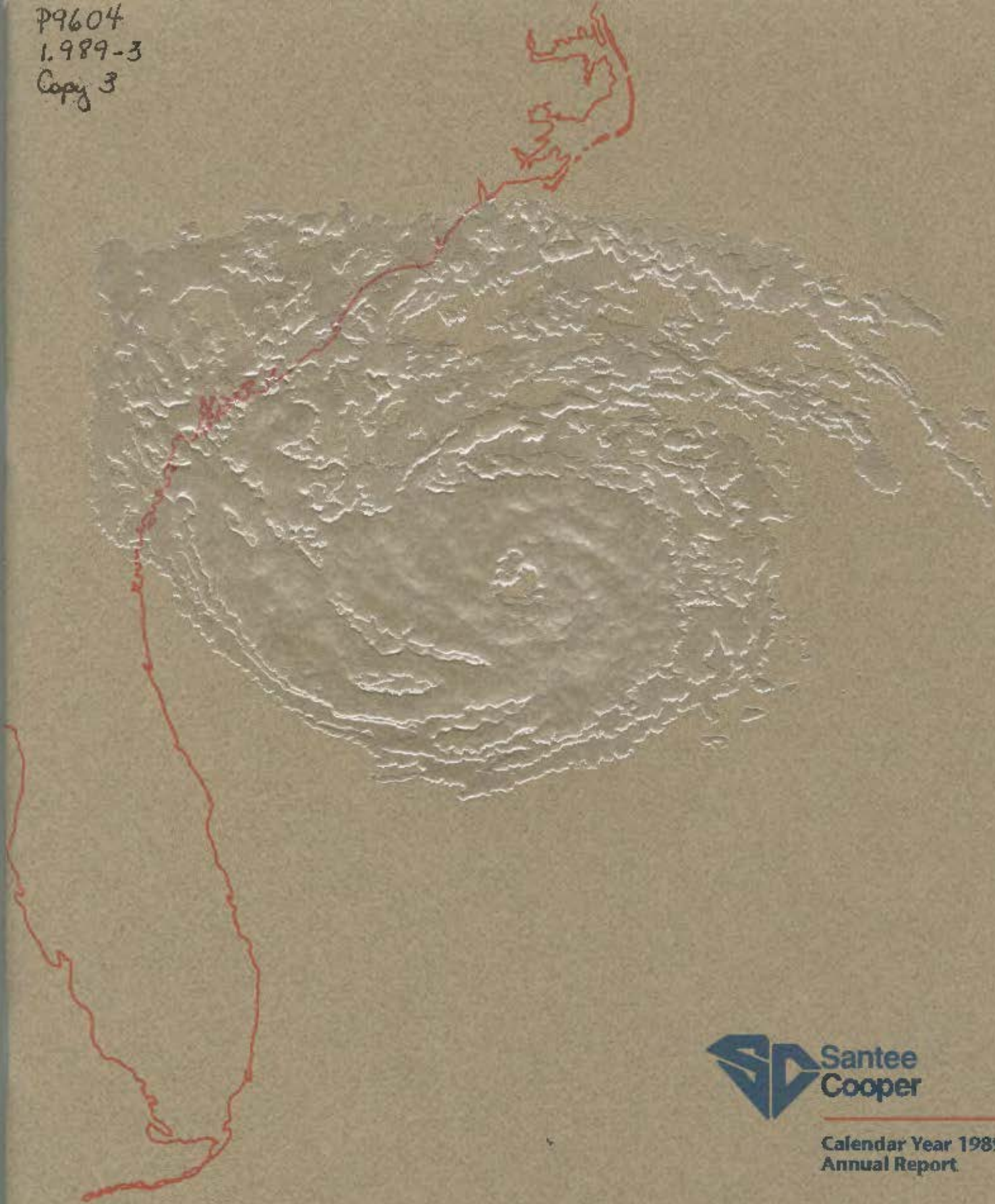

Santee Cooper

Calendar Year 1989
Annual Report

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On the evening of September 21, 1989, South Carolina experienced the most destructive natural disaster in the history of this country. Hurricane Hugo slammed into the state, leaving in its wake damages of more than six billion dollars. Millions of people were left without power and thousands homeless.

The dawn of September 22 brought a vision of devastation previously unseen in South Carolina. The whole world seemed transformed into an endless tangle of damaged and demolished buildings, downed power lines, and a landscape scattered with debris. The destruction looked more like the results of a mass bombing attack than a stroke of Mother Nature.

The beautiful environment of tall pine forests and moss-draped oaks had been ripped to shreds. Miles of coastline were washed away. Homes and businesses had simply disappeared. Acres upon acres of trees were uprooted or flattened by the winds. And tourism, the state's second largest industry, was brought to its knees.

In less than four hours, a system that had taken more than a half-century to build, had been torn apart. Lives, homes, and businesses – like straws in the wind – lay scattered across the land.

Photo courtesy of The Sun News, Myrtle Beach

Photo courtesy of The Sun News, Myrtle Beach

All photos by Richard Cecil unless noted

For the first time it its 55-year history, Santee Cooper lost its ability to generate power. A total blackout was suffered by all 85,000 retail customers and three military bases. Also without power were 27 of 30 industries, 13 of 15 electric cooperatives, and one of two municipalities. Santee Cooper suffered damages and economic losses of more than $21 million.

Santee Cooper's major challenge was to restore power and get the lights back on as quickly as possible. With the help of an army of more than 400 utility workers and emergency crews from other states, they worked around the clock and under the worst of conditions to pick up the pieces of this shattered puzzle.

The crews worked relentlessly day and night, sometimes by flashlight, to get the job done. Many worked as much as 16 hours on and eight hours off, seven days a week.

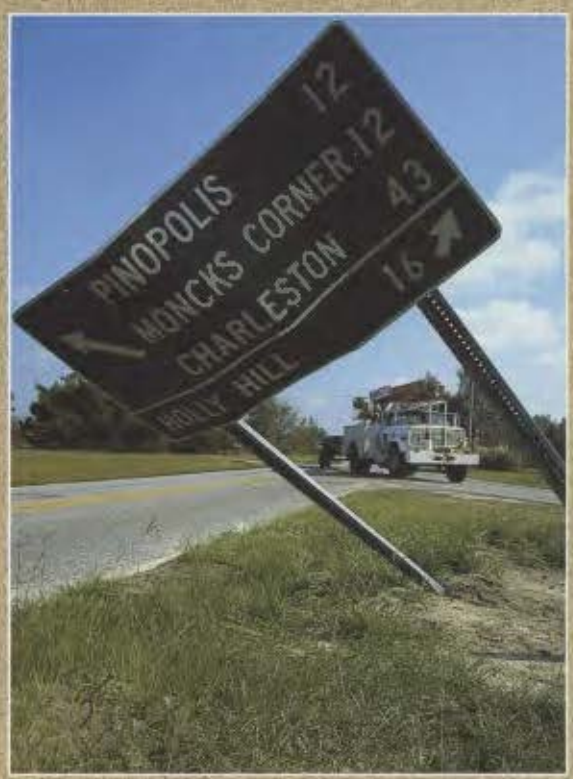
Pole by pole, circuit by circuit, they accomplished what seemed to be an impossible task. In less

than two weeks, they put the system back together.

But when Hurricane Hugo left, the greatest surge of power came from the people of South Carolina. Their force of resilience, determination, and strong will swept through the state as a thunderous chorus of people pulling together to triumph over the tragedy.

And as people and power crews pulled together, they drowned out the lingering roar of Hurricane Hugo's 150 mph winds. The spirit of the people was like a sail driven by the storm. Charged by the task of putting things right and starting life anew, they brushed themselves off and began the process of restoration. It was a process that made friends out of strangers and made all of them neighbors.

What seemed like an impossible task just days before culminated in a triumph of the human spirit over the fury of a storm. Power was restored.


PINOPOLIS 12
MONCKS CORNER 12
CHARLESTON 43
16
HOLLY HILL

Buildings were repaired. Debris was hauled away. But full recovery of damaged property will take years. And Mother Nature's healing and regrowth of the devastated environment will take more than a century.

Hurricane Hugo became the top news story of the decade for South Carolina, and its recovery and impact dominated the attention of Santee Cooper in the period covered by this report.

The story of Hugo's wrath and recovery is shared in this report through the personal experiences of a few of these employees, customers, and community members. For each of them, getting the lights back on met one of their more immediate needs. Of greater importance, however, was the commitment of the people to rebuild and restore their lives, which had been shattered by the storm of the century. The ultimate testimony to their strength and will comes in the response of this great state itself . . . as a newer, better, and stronger South Carolina.

Photo courtesy of: The Sun News, Myrtle Beach

Corporate Statistics

Calendar Year	***Six Months July-Dec. '89***	***Six Months July-Dec. '88***	***1989***	***1988***	***1987***	***1986***	***1985***
Total Utility Plant-Net Including Nuclear Fuel (at year end) (in thousands of dollars)	**1,761,109**	1,747,021	**1,761,109**	1,747,021	1,743,672	1,733,788	1,758,848
Bonded Indebtedness (at year end) (in thousands of dollars)	**1,950,665**	1,966,307	**1,950,665**	1,966,307	1,964,110	1,965,955	1,909,250
Operating Revenues (in thousands of dollars)							
Residential	**29,541**	29,056	**55,236**	53,760	54,242	50,186	44,713
Commercial	**28,715**	28,931	**55,039**	53,931	52,489	50,043	43,658
Public Street Lighting & Other	**1,007**	977	**2,001**	1,914	1,694	1,804	1,732
Industrial	**88,699**	92,291	**182,453**	178,340	161,003	155,342	168,250
Wholesale	**123,212**	111,695	**254,849**	212,363	211,671	211,592	186,523
Miscellaneous	**2,834**	2,302	**5,216**	4,640	4,430	4,556	2,030
Total	**274,008**	265,252	**554,794**	504,948	485,529	473,523	446,906
Operation & Maintenance Expenses Charged to Operations (in thousands of dollars)	**164,368**	148,986	**342,009**	295,109	279,927	266,266	259,758
Payments in Lieu of Taxes Charged to Operations (in thousands of dollars)	**1,737**	1,667	**3,449**	3,196	2,690	2,310	2,116
Payments to the State Charged to Reinvested Earnings (in thousands of dollars)	**2,777**	2,590	**5,366**	4,091	2,506	1,951	1,799
Net Operating Revenues Available For Debt Service (in thousands of dollars)	**120,377**	128,222	**235,147**	233,136	228,680	230,193	216,090
Reinvested Earnings (in thousands of dollars)	**24,695**	32,799	**43,492**	43,259	40,773	39,475	39,529
Debt Service Coverage							
Expansion Bonds	**na**	na	**1.64**	1.62	1.57	1.55	1.43
Priority Obligation & Expansion Bonds	**na**	na	**1.62**	1.60	1.56	1.54	1.42
Kilowatthour Sales (in thousands)							
Residential	**459,000**	445,993	**863,026**	840,387	821,247	773,593	689,946
Commercial	**523,220**	527,321	**976,504**	959,489	917,885	863,871	776,611
Public Street Lighting & Other	**17,874**	16,412	**35,180**	32,318	29,077	29,956	30,605
Industrial	**2,497,877**	2,744,875	**5,196,833**	5,399,795	5,283,726	5,070,756	4,977,798
Wholesale	**3,074,471**	2,652,044	**6,249,916**	5,058,358	4,751,694	4,432,702	3,998,870
Total	**6,572,442**	6,386,645	**13,321,459**	12,290,347	11,803,629	11,170,878	10,473,830
Number of Customers (at year end)							
Residential	**70,497**	70,881	**70,497**	70,881	67,998	64,946	60,758
Commercial	**14,759**	14,688	**14,759**	14,688	14,304	13,988	13,548
Public Street Lighting & Other	**286**	305	**286**	305	305	304	343
Industrial	**34**	30	**34**	30	30	29	29
Wholesale	**6**	5	**6**	5	4	4	4
Total	**85,582**	85,909	**85,582**	85,909	82,641	79,271	74,682
Residential Statistics (average) Kilowatthour							
Consumption/Customer	**6,307**	6,242	**11,885**	11,918	12,138	12,100	11,535
Cents/Kilowatthour	**6.44**	6.52	**6.40**	6.40	6.60	6.49	6.48
Total Generating Capability (Summer Peak Rating) (megawatts)	**2,780**	2,780	**2,780**	2,780	2,780	2,780	2,764
Power Requirements and Supply (kilowatthours in millions)							
Generation:							
Hydro	**294**	117	**545**	280	511	328	490
Steam	**5,407**	5,922	**11,152**	10,592	9,988	8,629	8,364
Combustion Turbine	**13**	9	**22**	9	(1)	–	1
Nuclear	**1,001**	518	**1,801**	1,680	1,713	2,382	1,740
Total	**6,715**	6,566	**13,520**	12,561	12,211	11,339	10,595
Purchases, Net Interchanges, Etc.	**169**	60	**373**	199	86	195	256
Total	**6,884**	6,626	**13,893**	12,760	12,297	11,534	10,851
Territorial Peak Demand (megawatts)	**2,707**	2,263	**2,707**	2,263	2,160	2,123	2,006

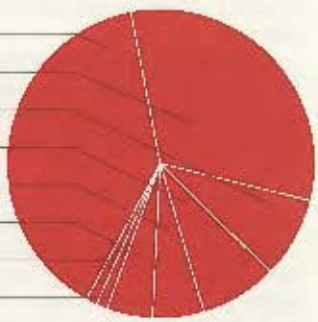
Comparative Highlights

CALENDAR YEAR	1989	1988	%CHANGE
FINANCIAL (thousands of dollars)			
Total Revenues & Income	$579,214	$530,121	9.3
Total Expenses & Interest Charges	564,515	513,106	10.0
Costs to be Recovered from Future Revenue	28,793	26,244	9.7
Reinvested Earnings	$ 43,492	$ 43,259	.5
Debt Service Coverage – Priority & Expansion Bonds	1.62 times	1.60 times	1.3
Debt / Equity Ratio	78/22	79/21	—
STATISTICAL			
Retail Customers Served	85,542	85,874	-.4
Average Annual Residential Consumption (KWH)	11,885	11,918	-.3
Average Residential Cost (cents per KWH)	6.40	6.40	—
Energy Sales (MWH)	13,321,459	12,290,347	8.4
Territorial Peak Demand (MW)	2,707	2,263	19.6

Source of Income

Calendar Year 1989 / In thousands

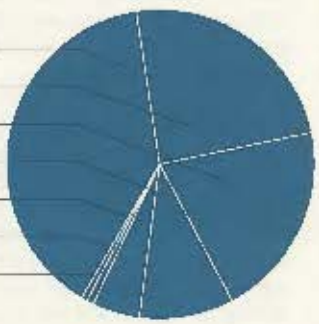
Sales to Electric Co-ops	$227,527	38.25%
Industrial Sales	182,453	31.50%
Residential Sales	55,236	9.54%
Commercial Sales	55,059	9.50%
Other Sales for Resale	33,322	5.75%
Other Income	24,420	4.22%
Other Electric Revenue	5,216	.90%
Public Street Lighting & Other	2,001	.34%



Distribution of Income

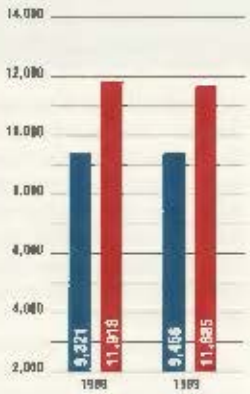
Calendar Year 1989 / In thousands

Fuel and Purchased Power	223,050	38.61%
Interest	139,120	24.09%
Operation and Maintenance	118,979	20.61%
Additions to Plant, Inventories, Etc.	54,132	9.38%
Retirement of Debt	36,629	6.31%
Payments to State	5,393	.93%
Sums in Lieu of Taxes	2,058	.36%



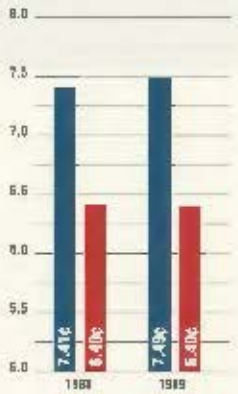
Average Residential Consumption

Calendar Year / KWH



Average Residential Cost

Calendar Year / Cents per KWH



National Average

Santee Cooper

Remarks by Dwight A. Holder

Chairman
Board of Directors

I am pleased to state, in this, my last annual report as chairman of the Santee Cooper Board of Directors, that despite Hurricane Hugo, Santee Cooper has enjoyed one of the best six-month periods and also one of the best years in its 55-year history. My being able to make such a statement is much more than an indicator of the solid financial foundation upon which Santee Cooper has traditionally operated.

Beyond the balance sheet, Santee Cooper indeed showed its mettle during the storm. It is truly amazing to me that just 13 days after the most devastating natural disaster ever to hit the United States, Santee Cooper had electricity restored or available to all customers.

I salute the hundreds of "Hugo heroes" who contributed so much to our recovery. This includes hundreds of utility workers, many from out of state, who worked tirelessly and selflessly for countless hours, methodically restoring electricity to our customers and to those on the cooperative system. Their toil and sacrifice will never be forgotten. There is no better example of true American spirit.

Santee Cooper continued on a solid financial path during 1989 and particularly for the last six months. Reinvested earnings were more than $43.4 million for the year and $24.6 million from July through December. Energy sales totaled 13,321 gigawatthours for 1989 and 6,572 gigawatthours for the last six months.

We contributed $5.4 million to the state to reduce the tax burdens on the people of South Carolina, and contributed approximately $3.4 million to the counties and municipalities in the areas we serve.

Also during the last six months, kilowatthour sales of electricity increased about 2.9 percent from the same period in 1988. Electric revenues increased approximately $8.7 million. Sales of electricity to Central Electric Power Cooperative Inc., the municipalities of Georgetown and Bamberg, and to other utilities increased 15.9 percent.

I am especially pleased that Santee Cooper has not increased rates in five years, and no adjustment is anticipated until 1992.

In addition to financial statistics, bond ratings also reveal much about a utility. Moody's and Standard & Poor's once again gave Santee Cooper A1 and A+ bond ratings, respectively. This is particularly impressive considering the pounding by Hurricane Hugo. Also, our debt service coverage and debt equity ratio continued to show improvement.

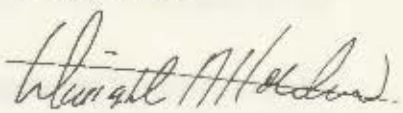
I resigned as chairman of the Santee Cooper Board of Directors on December 31, 1989. When I was appointed to the board in 1985, I told Governor Riley that this would be my swan song after 22 years of public service to the State of South Carolina.

One of the things most gratifying to me in my service as chairman has been the fact that we've really established public power in South Carolina as a factor in economic development. For example, participation in the creation of Palmetto Economic Development Corporation has to rank as one of the more significant accomplishments of my tenure.

I also find it gratifying that Santee Cooper's reinvested earnings were about $43.4 million last year. That is a good measure of Santee Cooper's financial stability, and I am very proud of the fact that Santee Cooper is in a strong financial position.

In naming John S. Rainey as new chairman of the board of directors, Governor Campbell has appointed one of the best business minds in the state to provide the oversight and direction needed to maintain Santee Cooper's position as one of South Carolina's most important economic resources.

I would like to express to each of our employees, a tremendous "thank you" for a job well done. The Hugo recovery is a good example of the strength we have in our workforce. We have top management that is doing a fine job. I have a grateful heart and fond memories.



Remarks by Kenneth R. Ford

President and
Chief Executive Officer

In 1989, Santee Cooper completed one of the most incredible, successful, and challenging years in its 55-year history.

Changes were made in top management and the chairmanship of the board of directors, setting a new course for South Carolina's state-owned electric utility.

In April, William C. Mescher was named president emeritus, providing him the opportunity to give full attention to his new position as president of the American Public Power Association, which represents more than 1,700 publicly owned electric utilities nationwide. After serving in an interim capacity for two months, I was named by the board to succeed Mr. Mescher as the new president and chief executive officer.

At the end of the year, board chairman Dwight A. Holder resigned, following five years of outstanding and productive service to Santee Cooper and 22 years of public service dedicated to the people of South Carolina. His goal to "awaken the sleeping giant" was certainly accomplished. We can thank him for leaving Santee Cooper with a closer and more effective working alliance with the electric cooperatives, improved financial strength, more streamlined management, improved service to our customers, and a stronger relationship with our state and local governments and the communities where we serve.

The selection by Governor Campbell of board member John S. Rainey as chairman, effective January 1, 1990, will provide Santee Cooper with the continued quality of leadership essential to ensure its success.

The past year was one of Santee Cooper's most successful years with record sales of electricity and peak demand. Greater emphasis was placed on quality growth and improved service.

To improve its reporting from a business perspective, Santee Cooper has converted its financial operations from a July 1 through June 30 period to a calendar year basis. This, document, therefore, is a transitional report, describing progress and activities which occurred between July 1, 1989 and December 31, 1989. The statistical information covers both that six-month period as well as the calendar year.

On September 21, 1989, Hurricane Hugo slammed into the coast of South Carolina, paralyzing this state and leaving its people in a condition of emotional and economic shock.

The devastating impact of Hurricane Hugo on the operations of Santee Cooper, the lives of its customers, and the majority of South Carolinians is almost immeasurable. Hugo delivered a $6 billion swath of destruction through South Carolina in an area served primarily by Santee Cooper and its electric cooperative customers. Cost estimates to repair and replace damages to Santee Cooper's facilities caused by Hugo total approximately $21.2 million. Of those losses, almost $4.8 million were insured, while $16.1 million will be recovered through federal and state disaster relief assistance. Unrecoverable costs are estimated at $300,000.

In spite of this cataclysmic occurrence, Santee Cooper, its customers, and the people of this state have rebounded from the wrath of Hugo with a faith and force that are remarkable. That response, described as "Power of the People," is used as the theme for this annual report.

Through the perspectives of employees, customers, and community leaders, the incredible story of force, fury, and faith is shared in this annual report. It is the story of Hurricane Hugo and how the people of South Carolina overcame its fury and frustration.

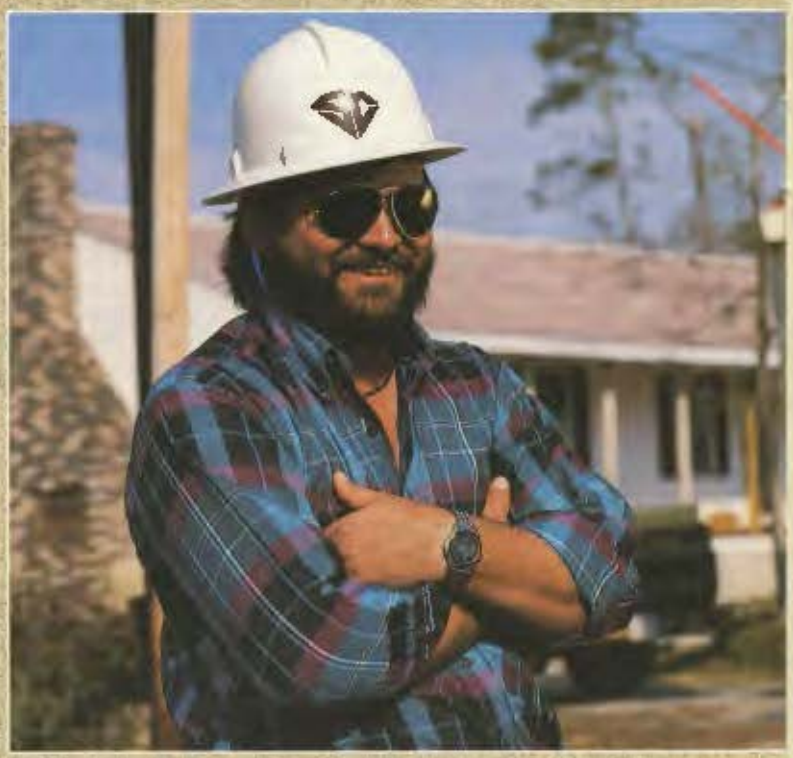
There is just no way I can express my thanks enough to our customers for their patience and understanding and to our employees for their tireless dedication. There was no task too small and no employee too big to do whatever had to be done, and I'll never forget it.

Hugo confirmed to many of us that our greatest asset is our people. They provide the commitment, determination, and energy, not only to overcome adversity, but to do our jobs well and provide the best service possible to those we serve.

Ken Ford

"For about three weeks, I didn't know what my house looked like in the daytime."

Line crew foreman Terry Wimberly is one of the men who worked long and hard to restore electric power after Hurricane Hugo's powerful winds wreaked havoc to Santee Cooper's transmission and distribution lines. ☐ Wimberly, a nine-year employee, says although he and the six men he supervises were ready for the storm, actually living through the experience taught him that planning is essential for recovery. ☐ "We made sure the equipment was ready," says Wimberly, who works out of Moncks Corner. "We fueled up and checked things. We figured out what we might be short of. But all the planning in the world couldn't prepare you for what came through here." ☐ By midnight, the intense winds had extinguished the lights in Moncks Corner. At daybreak Friday, he attempted to drive his service truck down Main Street, but trees and limbs blocked his path. Long days and nights followed. Everybody pitched in. ☐ "We started working 12 to 16-hour days," he says. "We didn't leave the Berkeley District for two months. But what really helped us out were employees from other units running chainsaws, clearing rights-of-way. I saw people working in the field I thought I'd never see working out in the field. If it weren't for them, we'd still be out here putting up lights." ☐ Wimberly praised crews from Georgia Power Company and Jacksonville Electric Authority. Construction companies from as far away as Maryland came to speed up the restoration process. ☐ Says Wimberly, "The people in the field really pulled together. Management did their job and did it well. The people hustled and got the lights back. Power may be restored, but the job is not finished. ☐ "We still have more than 4,000 miles of transmission and distribution lines that must be restored to prestorm conditions. It's probably going to take us at least three years to get things straightened out. Basically, we're going to have to rebuild the whole system."



Energy Sales

At the end of the six-month period, Santee Cooper was serving 85,542 residential, commercial, and other retail customers located in Berkeley, Horry, and Georgetown counties. This was a decrease of 332 or .38 percent over the same six-month period in 1988. Of this decrease, 384 were residential, 19 were public street lights and other, and there was an increase in commercial customers of 71. This compares with growth in the 1988 period of 2,883 residential and 384 commercial customers.

Sales to these retail customers were 1,000 gigawatthours, up 1.0 percent over the previous period.

The average annual consumption of electricity by Santee Cooper residential customers increased to 1,108 kilowatthours, 12 percent more than the 1988 six-month period.

The average cost per kilowatthour for Santee Cooper residential customers was 6.44 cents, 1 percent less than the previous period, and 15.3 percent lower than the national average.

The average cost of power for Santee Cooper commercial customers remained the same for the two six-month periods ending December 31 and was 22.8 percent lower than the national average.

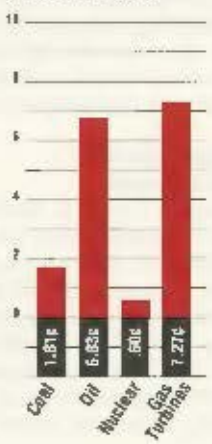
Industrial sales were 6,572 gigawatthours, up 2.9 percent over the previous period. The average cost of power to industrial customers was 3.55 cents per kilowatthour, 5.7 percent greater than the period in 1988 and 33.5 percent lower than the national average.

Sales to Central Electric Power Cooperative Inc. for its 15 member co-ops increased 7.2 percent to 2,759 gigawatthours. Central is Santee Cooper's largest single customer. The electric cooperatives distribute power to more than 300,000 customers in 35 counties.

Sales to the municipalities of Bamberg and Georgetown increased 4.2 percent.

Fuel Generating Cost

Cents / KWH
Calendar Year 1989



Distribution

Santee Cooper provided retail service to 85,542 customers in Horry, Georgetown, and Berkeley counties for the six-month period ending December 31. This is a decrease of less than one percent over the same period in 1988. Energy sales for retail customers were 1,000,095 megawatthours with revenue of $59,263,000 for the six-month period.

Horry-Georgetown – The Horry-Georgetown Division serves the municipalities of Myrtle Beach, Conway, Loris, North Myrtle Beach, Surfside Beach, Pawleys Island, Atlantic Beach, and Briarcliffe Acres, and the unincorporated areas of Arcadia Shores, Garden City, Murrells Inlet, and Waccamaw Neck.

The Horry-Georgetown Division provided new service to 1,234 single-family and multi-family homes and commercial projects. Among the new starts were the Founders Center, a five-story office complex in Myrtle Beach; Parkway Plaza, a 32-acre industrial center; and River Village, a 61-lot residential subdivision.

Ongoing projects included the completion of an underground cable replacement for Coastal Mall in Conway, underground service to 115 additional residential lots in the Plantation Point subdivision in Myrtle Beach, the installation of underground feeders to the Cherry Grove Substation, completion of the underground design for the Atlantic Center for Business and Industry, and the completion of the Windy Hill Substation and feeder circuits. The project to upgrade the system in Conway by converting from 4 KV distribution to 12 KV is now 85 percent complete.

The Division's automated mapping system encompasses 85 percent of the Horry-Georgetown service area. This facility's data base, which provides access, retrieval, and storage of mapping data, is used by various departments in Santee Cooper to provide safe, reliable service for all customers. User terminals were installed in the Garden City and Conway offices.

Supervisory Control and Data Acquisition (SCADA), used to remotely monitor and switch facilities in service, is almost fully operational in the Division with 34 of 36 substations being controlled through the system. In the Berkeley District, 95 percent of the SCADA installations are complete in the district's seven distribution substations.

The SCADA system was used to monitor and control Division distribution substations during and after Hurricane Hugo. In an effort to minimize system damage and protect the public, all feeders were placed on nonautomatic and allowed to trip off during the storm. However, before all feeders tripped, power being supplied to the Division was lost. Since telephone and radio communications were damaged, and no contact could be made with system controllers in Moncks Corner, Division Dispatch personnel worked directly with Grainger Station personnel to re-energize the load.

By the end of September 22, 39 of 117 feeders were restored. However, salt spray contamination on insulators caused the loss of 23 of these feeders that night. An early morning rain shower and the clearing and rebuilding of lines restored 105 of 117 feeders by the end of the day on September 23. By September 26, power was restored to two-thirds of Division customers. Scattered outages remained in the hardest hit South Grand Strand area, but all customers that could be reconnected had power by October 1.

After the storm, Division

Customer Services worked to remove approximately 6,000 meters that were contaminated due to salt or water damage. To date, approximately 2,000 meters have not been reset due to building structural damage.

Construction bids were received for the new Division headquarters complex located on U.S. Highway 501 between Myrtle Beach and Conway, and construction on the 40,000-square-foot building was scheduled to begin in February 1990. An addition to the Division Technical Services building in Myrtle Beach was completed along with renovations to the retail office at Pawleys Island.

Berkeley – The Berkeley District provided new service to 50 single-family homes, three new commercial customers, and one school addition.

Underground facilities were installed to provide future service to approximately 40 residential lots in the first phase of Stony Landing subdivision. In addition, two distribution feeder circuits were reconductored to prepare for increasing system load.

The major effort during this period concerned preparation for, and restoration after, Hurricane Hugo. Prior to the storm, arrangements were made to set up a Distribution Operations Center in the Energy Control Center. Personnel and equipment were made ready and positioned. Most breakers were left on automatic to maintain service as long as possible, since it was not expected that all circuits would be lost.

On September 22, Berkeley District Distribution crews joined other forces in clearing city streets so that system damage could be assessed. Approximately 95 percent of the distribution system was down or damaged, with all breakers locked out.

Based on preliminary damage findings, a decision was made to first begin reconstruction of Westside Circuit "B," which feeds a major water pumping station and a retirement home.

As Berkeley District personnel began reconstruction, calls were made to bring in 210 additional distribution personnel from seven different companies to assist in the restoration. The first crews arrived within 48 hours. Upon arrival, each crew was provided with system prints, area maps, portable radios supplied by Communications, and line material. Qualified Santee Cooper personnel, most of whom did not normally work in Distribution, were assigned to accompany and direct the activities of each outside crew.

Problems quickly became apparent as additional forces arrived. These included a limited food supply, insufficient housing, no running water, and no toilet facilities. As line personnel began the repairs and reconstruction, other Santee Cooper employees developed solutions to the growing list of problems. Personnel from other departments offered assistance and served as Distribution support workers. They were responsible for specific tasks or placed in charge of particular efforts for the duration of the restoration effort.

The first permanent restoration of power to a distribution load took place early on September 25, when the high priority Westside Circuit "B" was energized.

Thanks to the efforts of Distribution personnel and dozens of Santee Cooper volunteers from other work areas, all distribution loads which were ready to be energized were connected in just under 14 days.

During the following two weeks, Berkeley District and Horry-Georgetown Division Distribution personnel, including five seven-man contract line crews, assisted Berkeley Electric Cooperative in rebuilding and reenergizing approximately 160 miles of co-op distribution line.

Energy Management

The Good Cents New Home Program Award was granted to 184 customers. The Good Cents Program is a plan for reduced rates for energy-efficient, all-electric residences. Since the program started in 1987, 584 homes have been built to the Good Cents New Home specifications. As a result of customers seeking to qualify for the Improved Home rate discount, 379 energy audits were performed on existing homes. Eighty-seven of these audits have led to qualifications for the Good Cents Improved Home Program. Santee Cooper customers qualifying for the Mobile Home Good Cents Program total 19.

The increasing customer awareness of the Good Cents Program is reflected by the increase of qualifying customers served by Central Electric Power Cooperative. Cooperative homes certified in the Good Cents New Home Program totaled 515, 219 customers received the Good Cents Improved Home Awards, and 135 customers were certified for the Mobile Home Good Cents Program. To date, 1,205 new homes and 1,109 existing homes in the cooperative service areas are receiving the KWH rate discounts granted by Santee Cooper.

The end-use metering project, conducted in conjunction with Corporate Forecasting, Rates and Statistics, continues to provide excellent load and market research data. The data validates the consistent monthly coincident and noncoincident peak demand reductions obtained through participation in the Good Cents New, Improved, and Mobile Home programs.

Good Cents residential loans for energy-efficient home improvements totaled $170,615, including $147,989 for installation of new electric heat pumps. Seventeen fossil fuel and 12 electric resistance heating systems were converted to heat pumps. The total amount loaned since the initiation of the program is $2,335,917.

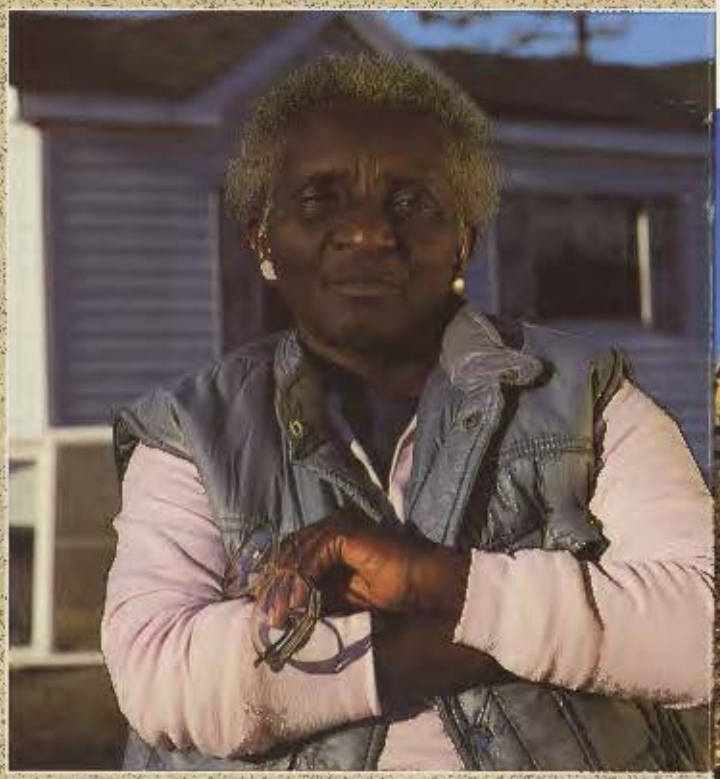
Santee Cooper's Energy Education Safety Program, "Louie, the Lightning Bug," was presented to 1,260 students and administrators in eight schools in Berkeley, Georgetown, and Horry counties.

Generation and Load Growth

Santee Cooper's facilities, which include one-third ownership of the V.C. Summer Nuclear Station, generated 6,714,718 net megawatthours of electricity during the last six months of 1989. This was an increase of 148,746 megawatthours, or 2.3 percent, above the same six-

"Except for the scorched earth, it looked just like Nagasaki and Hiroshima. *When your pride and joy is destroyed, it gets to you."* ☐ *J. Rutledge Connor's voice chokes with emotion, and at times, when recalling the night of Hugo's wrath, he finds it difficult to continue. He and his wife, Jean, lost the upstairs bedroom on their A-frame home and with it, most of their clothes.* ☐ *When Connor, or "Rut" as he's known, opened Rocks Pond Campground 25 years ago on Lake Marion, it heralded a new era in South Carolina camping – and more importantly, increased public access and recreational benefits from Santee Cooper's commercially leased property.* ☐ *The 569 campsites on 48 acres of lakefront land have played host to more than 52,000 families annually, primarily during the summer months. Hurricane Hugo didn't spare the popular resort. It destroyed it. To an Army veteran of World War II who was a member of the first occupying forces in Japan, the destruction evoked painfully vivid memories of unparalleled devastation. Still, he managed to find humor in his fate.* ☐ *"There are catfish out there wearing a full-length mink, a three-quarter mink, and a thousand-dollar Stetson," he says pointing toward the water. "After we cleaned up a bit, some folks went fishing. One person caught a blouse of Jean's still on the hanger. He wanted to know if he had to have a special fishing license."* ☐ *It was on Connor's property in 1795 that the first commercially successful cotton plantation in South Carolina was built. The Rocks house, built by Captain Peter Gaillard, still stands at the entrance to the campground.* ☐ *Connor is committed to rebuilding four hundred , 60-foot by 40-foot campsites targeted for older, upscale campers. He calls such campsites "the trend of the 1990s." By mid-May, things should be back to normal. The annual boat races, a perennially popular event, are slated for June 24.* ☐ *"You've got to have faith, and faith will move mountains," Connor says. "We're going to come back bigger and better than ever."*

*"**The wind was just roaring.** We heard trees falling. I didn't have the first idea the houses would go down. My niece's trailer split apart. At my trailer, I lost two bedrooms, my living room, my dining room, and my stove in the kitchen. I could've been gone. I don't want to have to go through another storm like that."* ☐ *Rebecca Chapman is a member of Berkeley Electric Cooperative, one of 15 South Carolina co-ops served by Santee Cooper. She lives at the intersection of McBride Road and U.S. Highway 17 between McClellanville and Awendaw.* ☐ *The suffering she and her relatives and friends endured with Hugo will remain etched in the memory of the 62-year-old senior citizen for the rest of her life. This rural stretch of highway between Charleston and Georgetown has been her home since 1974. She shared the residence with her nephew. Mrs. Chapman monitored Channels 2 and 5 as the hurricane grew closer. Her son had to present a convincing argument that her home simply wouldn't be safe from the impending elements.* ☐ *At around 8:30 that fateful Thursday night, Mrs. Chapman left her home, much to the relief of her son. She and about 20 other family members and neighbors crowded into her niece's home to ride out the storm. It was a long night of prayer for many, a forced vigil filled with concern for life and limb.* ☐ *"After the 11 o'clock news, the power went off," says Mrs. Chapman. "Everybody got shook up. I was lying on my niece's couch. We couldn't sleep through that storm. It lasted about four hours."* ☐ *At daybreak she made her way back to her home. What remained broke her heart. But she needed only to look around to see a fate shared by her neighbors. Hugo touched everyone in her community.* ☐ *One thing the hurricane has done, she says, is strengthen her faith in God. As superintendent of the Sunday School and head of the choir at St. James AME Church, she has continued to help others with spiritual needs in the close-knit community.* ☐ *Mrs. Chapman got help, too. "Different states came in," she says. "I thank the Lord for them. I think it was about 36 states. I got canned goods, sheets, and pillowcases."* ☐ *Picking up the pieces of her life included picking up dishes and glassware Hugo scattered in a field near her besieged home. Mrs. Chapman's life is back to normal now. She's enjoying a new, fully furnished, double-wide mobile home, the result of her insurance settlement. She also has a newfound appreciation for electricity. She and her neighbors lived without it for three weeks.* ☐ *"I think the co-ops did a good job getting us back like they did," she says. "I know they worked hard."*



month period in 1988.

Of the total energy generated, 80.4 percent was produced by coal, 14.9 percent by nuclear, 0.3 percent by oil, and 4.4 percent by hydroelectric. The peak hourly demand for the last six months of 1989 was 2,707 megawatts, which occurred on December 23. This was an increase of 19.6 percent over the same time period in 1988.

Generation from the V.C. Summer Station was used to meet Santee Cooper's diminished system load the morning following Hurricane Hugo. One of the combustion turbine units at Myrtle Beach was used to "black start" the coal-fired Grainger Station in Conway, which was isolated from the rest of the Santee Cooper system. On September 23, a diesel generator was used to "black start" a hydroelectric unit in Moncks Corner, another area isolated as a result of the storm. With the exception of the reduced capacity at Winyah Unit No. 3 because of damage to the cooling tower, all generation resources were available five days following the hurricane. Cross Station was down for scheduled maintenance when the storm occurred.

Reliability

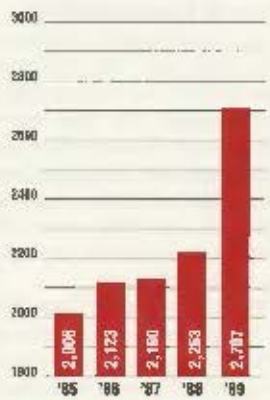
Santee Cooper is one of 30 member organizations in the Southeastern Electric Reliability Council (SERC). It includes all power suppliers in the region with a generating capacity of 25 megawatts or more. SERC assists member systems in coordinating planning and operations to achieve maximum reliability of power supply.

Santee Cooper is also one of seven power systems in the Virginia-Carolinas Reliability Group (VACAR). VACAR also includes Carolina Power & Light Company (CP&L), Duke Power Company, South Carolina Electric & Gas Company (SCE&G), the Southeastern Power Administration (SEPA), Virginia Power, and Yadkin Inc. VACAR member systems have a coordination agreement to safeguard the reliability of service.

Santee Cooper maintains interconnections with the Southern Company at McIntosh; with the

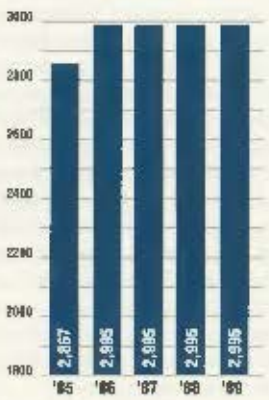
Peak Demand

Calendar Year
In Megawatts



Capacity

Calendar Year
In Megawatts



Southern Company and SEPA at the Richard B. Russell Dam; with SCE&G at Bushy Park, St. George, North Charleston, Mateeba, Columbia, and the V.C. Summer Nuclear Station; with SEPA, SCE&G, Duke Power Company, and the Southern Company at Lake Thurmond; and with CP&L at Darlington, Hemingway, Kingstree, Lugoff, and Hartsville.

The reliability of Santee Cooper's interconnections was severely tested immediately following Hurricane Hugo. In the early morning hours of September 22, only six of Santee Cooper's 15 interconnections remained in service. Within three days, all but three interconnections had been reestablished. With a majority of Santee Cooper's generation resources down, Santee Cooper utilized its neighboring utilities' interconnections in the western part of the transmission system to supply additional generation necessary to meet the diminished system load. The 230 KV interconnection with SCE&G at Bushy Park was destroyed and will be out of service for at least 18 months. Santee Cooper is upgrading the facility to increase economic and emergency bulk power transfer capability.

System Planning

System Planning coordinated a task force which contracted with Stone & Webster Management Consultants Inc. to conduct a least-cost generation study. The final report was issued in November 1989. The recommendation: Santee Cooper should install by 1995 a second 500-megawatt generating unit at Cross Station to meet expected future electric load growth.

System Planning personnel volunteered for various duties immediately following Hurricane Hugo, including assisting in the restoration of the transmission lines and substations which serve Alumax of South Carolina, Santee Cooper's largest industrial customer, with an electrical load of over 300 megawatts. Other activities included coordinating with Berkeley Electric Cooperative in restoring service to John's Island and expediting contact between operating personnel and other members of the Southeastern Electric Reliability Council in Florida which sent line crews to help with repairs.

Power Supply

Off-system capacity and energy sales of 215 megawatts were made under contracts with Virginia Power and North Carolina Eastern Municipal Power Agency. A total of 236,376 megawatt-hours of electricity was sold to Virginia Power and North Carolina Eastern Municipal Power Agency during the last six months of the calendar year under the off-system sales contracts, for a total of $8,167,630.

The system controllers purchased 77,606 megawatthours of economy energy from the interconnected utilities from July to December to displace higher-cost generation for a savings of

$227,705. Also, 135,032 megawatthours of economy energy was sold to the interconnected utilities for a total of $4.3 million.

Santee Cooper's Supervisory Control and Data Acquisition (SCADA) system was expanded both in transmission substations and in generating stations. SCADA provides the system controllers with greater remote control and monitoring of the power system. A total of six remote terminal units were installed during the six-month period. Also installed on the SCADA system were computer programs to continuously monitor and forecast the reliability of the power system.

The SCADA system allowed system controllers to monitor system conditions both during and after the hurricane. Effective use of the SCADA system provided a systematic approach to re-energizing facilities and allowed efficient use of limited manpower resources

The first priority of system controllers after Hurricane Hugo was restoring service to customers. The transmission system in the western part of the state was intact, so efforts immediately began to restore facilities in all other areas of the transmission system.

Within two days, system controllers placed generation and transmission facilities in service so that the Myrtle Beach and Georgetown areas were energized and synchronized to the interconnected system. By September 26, the Moncks Corner area was energized and synchronized with the interconnected system after repairs were completed on two key 230 KV transmission lines. By the end of the second week, power was restored or available to all of Santee Cooper's residential, industrial, wholesale, and military customers.

The Energy Control Center functioned for the first two weeks after the hurricane as the command post for recovery efforts to restore power to the utility's customers. Until extensive repairs are completed to allow loop-feed capability, Power Supply Planning personnel and the system controllers closely coordinated activities in determining the sequence of line restoration, utilizing operating experience and computer programs to ensure quality service.

General Construction

In July and August, numerous large-scale site development projects were under construction. They included the new Horry-Georgetown Division office and the Bennettsville, Campfield, and 21st Avenue substations. Approximately 150,000 cubic yards of fill material was used in the construction of these sites.

Work on the West Dam Seismic Mitigation Project continued 24 hours a day, seven days a week through the first week in September. Over 300,000 cubic yards of fill material were placed in the foundation of the new embankments designed to provide additional reinforcement for the dam in the event of a large earthquake. The Federal Energy Regulatory Commission (FERC) approved Santee Cooper's plan for constructing an underwater rock dam in the Diversion Canal to be used as a cutoff of Lake Marion from Lake Moultrie should a breach occur in the Santee Dam. This innovative approach, developed by General Construction to meet the FERC directive, means a $2 million cost savings over the next feasible alternative.

Hurricane Hugo interrupted ongoing work, but the General Construction unit played a leading role in the cleanup operation for Santee Cooper. Cleanup began in the early hours of September 22. The most pressing problem was the need to open roads so Santee Cooper line crews could make the necessary repairs to the system transmission lines. Crews from General Construction cleared impassable roads including S.C. Highway 6 from Santee to Moncks Corner, S.C. Highway 45 from Pineville to St. Stephen, and U.S. Highway 52 from St. Stephen to Moncks Corner. All of the roads in Moncks Corner and St. Stephen were cleared by crews from General Construction in addition to the entire distribution line service area of Moncks Corner and Bonneau. In all, more than 100 miles of roadway were cleared immediately following the hurricane to assist the local municipalities, counties, and state agencies which sustained damage caused by the storm.

Flood Control

As a result of heavy rainfall during early October, spilling operations were conducted for an eight-day period. During that time, a total of 219,792 day-second-feet (dsf) was spilled. The maximum average discharge for a one-day period reached 34,000 cubic feet per second (csf) and was held at that level for a five-day period.

Design Engineering

Design Engineering completed work on four major transmission lines and 13 substation projects. These additions were necessary to meet increased customer demand. Design was also completed on two major communications and SCADA projects. Survey work was completed on 200 acres of land being developed by Teledyne Industries, a new electric co-op industrial customer locating its facilities on a 600-acre industrial park in Chester County.

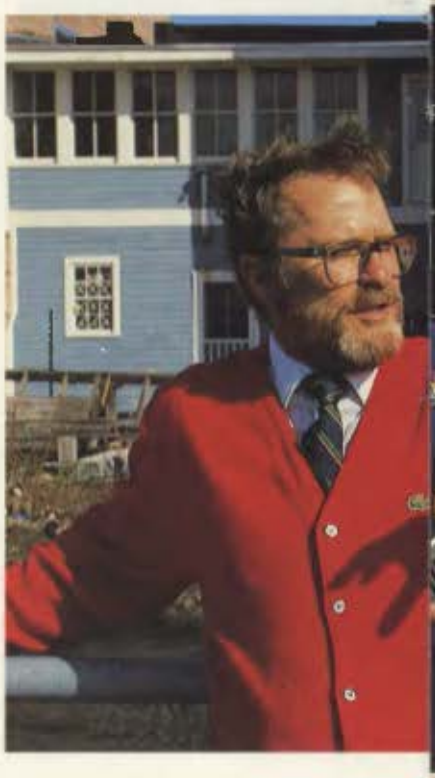
All areas of Design Engineering were involved in efforts to restore the system following Hurricane Hugo. Support services were provided for the crews from other states who assisted with line restoration. Engineering Graphics and Maps and Records provided over 1,200 maps of the distribution system, and Engineering Standards distributed copies of reference manuals for construction standards.

Employees from all areas helped where needed to perform tasks as diverse as directing traffic, doing laundry, patrolling distribution and transmission lines for assessment of damages, and working in the warehouse to provide needed materials.

Design work was completed for three of the transmission lines and one substation damaged during the storm. It was also necessary to replace one microwave tower that was destroyed.

Right-of-Way Management

Prior to Hurricane Hugo, Right-of-Way Management took



"You folks at Santee Cooper really saved Georgetown. *They were at first talking about three or four weeks without power. Our mayor was really concerned, particularly about water and sewer problems. I guess 90 percent of the town was back up within a few days. We really appreciate what you did."* ☐ *R. Cobb Bell, finance director of the City of Georgetown, recalls the mental images of Hurricane Hugo, framed against the backdrop of uncertainty in the first few days after the disaster.* ☐ *"I remember people standing in line for ice," he says. "I remember feeding the city employees with some shrimp I had in my freezer, and I remember listening to Channel 5 on the radio. And we had some friends who stayed with us. It was a time for everyone to come together.* ☐ *"Some of the stores were really hard hit," says Bell of Hugo's destruction downtown. "There was a lot of damage and lost inventory. And down on the east end of town, a lot of residences got hit hard." Unlike many Lowcountry residents, Bell has firsthand knowledge of another storm which made landfall just north of the Georgetown area in October 1954.* ☐ *"I remember Hurricane Hazel," he says. "I was at Wofford College at the time. Fortunately, Georgetown didn't get much damage. This time, though, it was a little different."*

☐ *Located approximately 30 miles north of Charleston, South Carolina's "other" port city suffered a fate somewhat similar to the rural, less-populated areas in terms of Hugo recovery.* ☐ *"We didn't have the media attention and coverage like Charleston," Bell says. "But the outpouring of concern really impressed me. Other municipalities, Newberry for example, sent equipment and personnel. You just don't expect people doing that kind of thing."* ☐ *Georgetown is back. The boardwalk, now as much a focal point of the city as the old clock tower, still has couples walking arm-in-arm along the waterfront at sunset. Patrons have long since returned to the River Room Restaurant. It's a peaceful and picturesque setting—just as it should be.* ☐ *"The city and Civil Defense did a good job of planning for Hugo," says Bell. "And so did Santee Cooper."*

"There was a fear. Not that we were going to die, but a feeling of helplessness and powerlessness." *To Reverend Gene F. Couch, pastor of the Moncks Corner United Methodist Church, Hurricane Hugo's passing evoked memories of a time when the man of the cloth was a man of the soil, farming almost 700 acres in rural Orangeburg County. ☐ "We lost just about everything on the farm when Hurricane Gracie came through in '59," says the Texas native, who's spent almost 30 years in the ministry. "Cotton, silage, it was just devastated," he recalls. ☐ Couch faced another battle with a hurricane. This time it was his church and 650-member congregation, that spiritual place and community bulwark, that yielded to the powerful forces of nature. ☐ "The steeple was toppled, and there was extensive water damage," Couch says of Hugo's quarter-million-dollar wrath at the corner of Church Street and Live Oak Drive. "One thing I remember is that the next day the sun came out, such a contrast to the night before. ☐ "We were afraid to go into our sanctuary, so we had church that Sunday in the chapel on the second floor of our educational building. We had 75, 80 people. Nobody had water, electricity. It was sort of 'come as you are.' What we did was mainly share together. I think it was a very moving experience." ☐ Couch says he'll never forget sitting in his office the Monday after the storm. Friends called from Newberry, S.C. "I told them, 'We need water, food, clothing, and flashlights. We need those things now.'" ☐ Couch, his congregation, and a host of volunteers then set about the business of organizing a much needed response to critical human needs in Berkeley County. It was the rural areas, removed from the intense interest of national media, that suffered most. ☐ His church became an official distribution point for the Lowcountry Chaper of the American Red Cross. He helped organize, with the assistance of fellow clergymen and parishioners, 25 other distribution points at churches and community centers in St. Stephen, Cross, Macedonia, Bonneau, Jamestown, Schulerville, Huger, and Cainhoy. ☐ At its peak, more than 80 volunteers worked around the clock for almost two weeks, with Couch's church as headquarters. He's also chairman of Interfaith Ministries, an outreach, volunteer program that provides basic, livable housing to the poor of Berkeley County. ☐ "It took Hugo to point out the need for adequate housing," says Couch. "There's so much to do here." The storm has changed his life, and the lives of others. ☐ "It's been people doing for people," says Couch. "It has brought us together with a tremendous spirit of cooperation. I don't think we ever got down. I've gotten a new appreciation for race relations. I've gotten to know some of my fellow ministers. ☐ "It's been so great, the hope and optimism I see in this community. The people are to be commended. You keep hearing the cliché, 'the good coming out of it', but it's true."*

a leading role in working with the South Carolina Land Resources Conservation Commission, the South Carolina Wildlife and Marine Resources Department, and private landowners to provide and enhance wildlife habitat and control erosion throughout Santee Cooper's system. A more intensive effort has been made to improve the appearance of substations and transmission line corridors through the use of plantings and vegetation screens.

The effectiveness of the integrated management system used by this unit was tested during and after the hurricane. Increases in right-of-way reclearing acreage, which averaged over 13,000 acres annually for the past five years, have reduced the cutting cycle from four years to between two and two-and-one-half years. Traversability and relative freedom from heavy brush conditions on the right-of-way facilitated the restoration effort.

Immediately following the storm, both contract and Santee Cooper reclearing personnel and equipment concentrated on removing debris from transmission and distribution rights-of-way. Even though most routine activities resumed within three weeks after the hurricane, restoration efforts by some unit personnel will continue until spring 1990.

Right-of-Way Management directed the debris removal activities for most of Santee Cooper's Berkeley District. Additionally, heavy equipment from this unit reestablished roads and fire lines throughout Santee Cooper's developed and undeveloped properties and will continue through February 1990.

Transmission Lines

Just two weeks before Hurricane Hugo struck, a revised and expanded storm plan was adopted by the Transmission Lines unit. The plan proved to be invaluable in preparing for the storm and an asset during the storm.

The Transmission Lines unit suffered extensive damage from Hurricane Hugo. The storm left in its wake nearly 30 percent of the entire transmission system de-energized.

Transmission Lines unit personnel were responsible for assessing the damage, providing the necessary equipment and personnel, and ultimately restoring service to customers.

Line patrol by helicopter began as soon as conditions permitted. A preliminary patrol report described the extent of damage to each transmission line. Also, the patrol information was evaluated to determine which lines could be repaired more rapidly and the priority status of each line.

A second patrol was performed to obtain the structure numbers and to develop a list of materials needed to repair each structure. As the assessment was being made, contract crews reported to Moncks Corner and Darlington.

A total of 24 Santee Cooper, contract, and other utility line crews were engaged in repairing the crippled transmission system.

In the Central Division, approximately 560 poles were broken or damaged. Also, 29 co-op substations, 32 industrial customers, and 20 Santee Cooper-owned stations were without power. Twenty-five line sections, comprising 651 miles of transmission lines, were de-energized. All power was restored in two weeks.

In the Northern Division, 97 poles were broken or damaged. Also, 51 co-op substations, one industrial customer, and three Santee Cooper-owned stations were without power. Forty-five line sections, comprising 258 miles of transmission lines, were de-energized. Power was restored in one week.

In the Western and Southern divisions, damage was minor and power was restored to all customers in less than two days.

Operations Technical

Following Hurricane Hugo, it became clear that communications would be vital to the recovery. Radio traffic quickly reached unprecedented levels, causing problems with coordinating restoration efforts.

Part of the microwave system remained operational until standby batteries went dead the day after the storm. Restoring the microwave system to full operation was a top priority. The 350-foot-high microwave tower at the Santee Spillway collapsed. Twenty-one other towers were either twisted or had slack guys or shifted dish antennas. All sites were inspected. Portable generators were provided to charge the batteries until commercial service could be restored. The Santee Spillway tower was replaced and operational within 15 days.

The dam emergency warning system in the Santee River Flood Plain was extensively damaged. Fifty-six of ninety solar panels had to be replaced.

Substations survived Hurricane Hugo with very little damage. Transformers, circuit breakers, and control houses sustained only superficial damage. Very few operational problems were encountered with the substation equipment during restoration. The primary problem encountered by System Substation Maintenance personnel was charging dead control battery banks and ensuring that circuit breakers would operate when needed to reenergize lines and substations. Unit personnel also assisted in charging the battery banks at many microwave sites to keep the microwave system functioning.

During Hurricane Hugo, personnel from System Relay were involved in performing switching at various substations to restore the transmission system. Employees also operated emergency generators to charge batteries at substations and at microwave sites. Relay personnel also assisted Distribution personnel in assessing the damage to distribution lines.

System Metering personnel assisted line crews in clearing debris from the Berkeley District distribution lines. As power restoration began, some personnel continued clearing while others installed secondary conductors to homes and businesses.

Damaged meters had to be removed and replaced. To assure proper customer billing, readings were taken from all meters returned to System Metering.

System Metering also assisted in areas such as cleaning sleeping quarters for contract crews and delivering meals and materials to construction crews

Project Management

Project Management assisted in damage assessment of substations and transmission lines in the aftermath of Hurricane Hugo. Help was also provided by receiving shipments of materials around the clock for weeks following the storm. Five emergency projects began to replace key transmission lines which were destroyed.

The Charleston Navy Base, one of three military bases served by Santee Cooper, sustained extensive damage to its facilities. Because construction was complete on the new South Navy Yard 115 to 12 KV Substation, Santee Cooper was able to restore service to the Navy using this facility sooner than would have been possible otherwise.

In addition, Project Management coordinated work during the transition period for 60 other substation and transmission line projects throughout the system with costs totaling over $20 million. Work on key projects included the Campfield-Arcadia transmission line, service to Central Electric Power Cooperative for Teledyne Industries, and the Marion to Bennettsville transmission line to serve Willamette Industries.

Performance and Environmental Services

The Performance Services unit conducted seven operating heat rate tests and one American Society of Mechanical Engineers turbine cycle performance test on various generating units. This unit also conducted capability tests on generating station cooling towers.

A computer modeling group was established in Performance Services to use Santee Cooper's mainframe computer in developing thermodynamic models of each of the generating units. These models are used by Santee Cooper engineers to provide in-depth analyses of test data collected by the performance test groups, and to conduct studies requested by other departments.

The modeling group also developed an on-line monitoring system that will ultimately be applied to all coal-fired generating units. This system will continuously monitor thermal performance using field instruments, microcomputers, and the host mainframe computer.

The combined efforts of testing and modeling groups allowed Performance Services to provide information used to improve the operating efficiencies of the generating units, to more cost-effectively predict and plan maintenance, and to dispatch, buy, and sell electricity as economically as possible.

The Air Quality Assessment unit performed emissions tests for particulate, sulfur dioxide, and nitrous oxide emissions at the generating stations. The unit also purchased a transportable emissions monitoring system to provide a backup monitor for the generating stations. Quality assurance tests were performed on Cross Station's monitoring system.

New five-year operating permits were obtained from the South Carolina Department of Health and Environmental Control for Units No. 1, 2, 3, and 4 at Winyah Station.

The Environmental Services unit performed tests to determine pollutant levels in wastewater, sediments, soils, hazardous wastes, solid wastes, used oil, mineral oil, and drinking water. Environmental seminars were conducted to educate employee groups regarding state and federal regulations and their impact on Santee Cooper's operations.

Working together with various operations and construction units, the PCB management plan was updated; applications for discharge permits were made; over 100 Spill Prevention and Countermeasure Control plans were published; and work began on storm water discharge permitting. Administration continues in such areas as community right-to-know, used oil management, PCB management, solid and hazardous waste management, monitoring of underground storage tanks, groundwater monitoring, and spill prevention control and countermeasures.

In a new system-wide project for energy recovery, used oil is collected, sampled, and incinerated at Winyah Station. In the past, waste oil was a liability that required expensive disposal methods by outside contractors. Today, Santee Cooper's waste oil is an energy resource that benefits all customers by reducing the cost of generating electricity.

Production Operations Management

Santee Cooper's generating system survived probably the most challenging year in its history, with a Class 4 hurricane that was followed by extensive cold weather resulting in record peak demands. Peak demand was up 19.6 percent over the same six-month period in 1988.

Availability of coal-fired generation also improved. System availability averaged 94 percent for the six months ending December 31. The availability for Grainger Unit No. 2, Jefferies Unit No. 4, and Winyah Unit No. 1 averaged better than 99 percent. The national average availability is approximately 83 percent.

Grainger Station won the 1989 Goals Program. Grainger Station had only two recordable accidents during the year. Cross Station won the heat rate award, saving the equivalent of $600,000 in coal when compared to the previous year's heat rate efficiency.

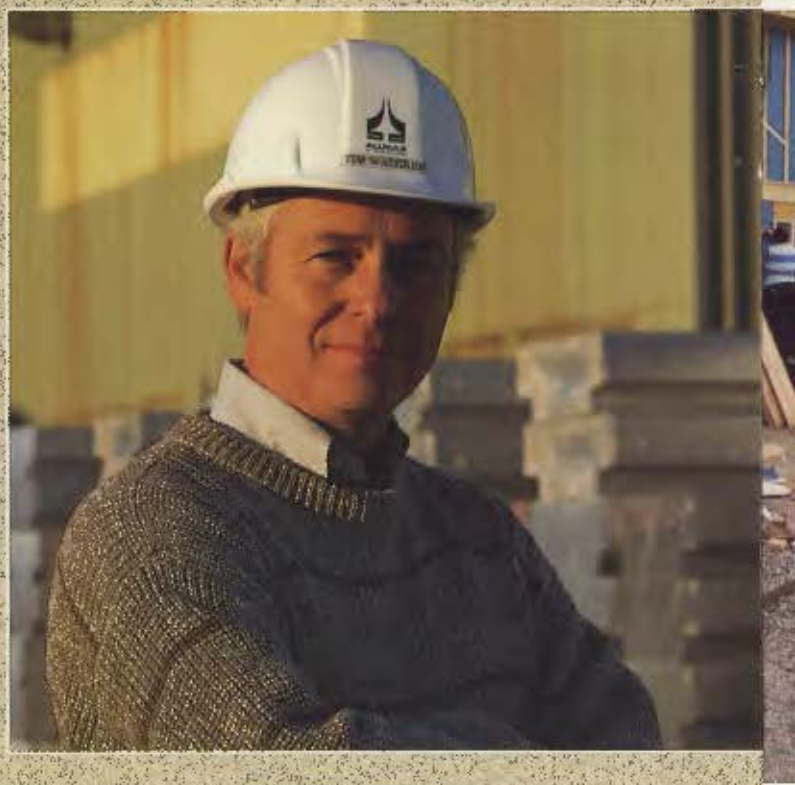
Winyah Station moved into its new maintenance and warehouse complex. This included transfer of 19,000 different warehouse line items totaling millions of parts. The new Central Maintenance Complex has improved Santee Cooper's ability to serve Winyah Station and other generating facilities with existing in-house personnel.

A rebuild of Jefferies Hydro Unit No. 1 was completed, the first time this had been done since the unit began operation in 1942. The 17-week outage included complete disassembly and re-assembly of the unit, with most of the off-site machining of the large components provided by the new Central Maintenance Complex at Winyah Station. A cost savings of more than $200,000 was realized through the use of the new complex.

Although all generation was lost during Hurricane Hugo, the Myrtle Beach Gas Turbines, Grainger Station, and Hilton Head Gas Turbines were available within two

"Myrtle Beach took a double-hit from Hugo. First, there was the damage. Then, the national media initially reported we were wiped off the map." ☐ Even the mere threat of a hurricane is enough to make Myrtle Beach Chamber of Commerce executive director Ashby Ward very nervous. He says Hurricane Hugo proved to be the greatest public relations challenge the Grand Strand has ever confronted. ☐ By all accounts, the popular resort is back on its feet and counting on another banner year. Ward knew that given the very competitive nature of tourism, the economic stakes were very high. Tourism is annually a $1.7 billion industry there, employing 38,000 workers full-time during the peak summer months. ☐ "Let's face it," says Ward. "We're talking about people's discretionary dollars. They don't have to spend it here." It was imperative to act quickly. ☐ What happened is this: Diverse tourism interests met and immediately formed the Hugo Economic Renewal Task Force. Their goal is to raise $1.5 million in a massive public relations campaign to let the world know South Carolina's Grand Strand still has the welcome mat out for visitors. ☐ Four organizations are involved: the Myrtle Beach and Georgetown Chambers of Commerce, the Myrtle Beach Hotel-Motel Association, and the Myrtle Beach Golf Holiday. In addition, a host of business interests are giving their time and money to the project. ☐ "I think there were so many positive things to come out of Hugo," Ward says. "It's been an opportunity for hotel and motel owners to repair with insurance money. Secondly, it's given older properties a new lease on life by affording the owners the opportunity to repair and refurbish. A lot of oceanfront hotels have chosen to repair and remodel. So, Myrtle Beach will be better. ☐ "The physical recovery has been remarkable. Santee Cooper played a big role in that. It's amazing. We could've been crippled for months. We were without power less than three full days. That's pretty amazing. Looking back on it, I think the best thing that happened here was that the governor issued that mandatory evacuation order. I know that saved lives."

"We didn't anticipate a Hugo. No one anticipated a Hugo." *Timothy Walgren, vice president, External Affairs at Alumax of South Carolina, Santee Cooper's largest industrial customer, certainly didn't anticipate that the daily production of approximately 3,000 pounds of aluminum would come to a halt during the predawn hours of September 22. "Santee Cooper did a terrific job trying to keep us on-line," says Walgren. "Hugo was simply too much for everybody."*



On that fateful night, the four transmission lines feeding more than 300 megawatts of electricity into America's third-largest aluminum plant, located in the Berkeley County community of Mount Holly, went down, one by one. But not before personnel at the Energy Control Center in Moncks Corner rerouted electricity until there were no lines to get it there. For the first time since Alumax began operations in 1980, the 24-hour-a-day, 365-day-a-year operation came to a standstill and with it, a weekly demand of $1.7 million worth of electric power. Within six hours, molten cryolite (sodium aluminium fluoride) solidified in concrete-like chunks in each of the plant's 360 large steel shells, called "pots," or "cells." These production cells hold alumina, which is refined from bauxite, a clay-like ore from which aluminum is made. But only a day after the storm, a workforce of 630, including accountants and other nonproduction personnel, began reclaiming the solidified cryolite, laboriously chiseling away at the hardened material with jackhammers and shovels. The tedious process took weeks of 12-hour days, but by October 2, Alumax was again producing aluminum on a limited basis. With each passing day, about eight cells were brought back into production. On November 29, the plant reached full production capability.

"Hugo cost us between $20 million and $30 million," says plant manager Paul Campbell. Timber losses alone have been estimated between $2 million and $3 million on the firm's 6,000-acre tract. "It's a testament to our tremendously dedicated employees that we were able to come back so quickly," Campbell says. "They all did a tremendous job."

hours following the storm. The generating stations sustained approximately $2.4 million damage due to the hurricane. However, most of the damage was to the buildings, and all electrical generation was available within one week following the storm.

A computerized maintenance system was begun at Winyah, Cross, and Jefferies stations. The system tracks work requests, coordinates parts, and provides a history on station equipment and maintenance practices. Grainger Station's system was scheduled for January 1990.

Nuclear Operations

The V.C. Summer Nuclear Station, an 885-megawatt nuclear generating plant jointly owned with South Carolina Electric & Gas Company, continued to be a major contributor to Santee Cooper's energy supply.

During the six-month period, Summer Station provided 1.0 billion kilowatthours of electricity for Santee Cooper customers, or 15 percent of the company's total electric sales.

Summer Station operated throughout calendar year 1989 without a refueling outage. The next refueling outage is scheduled for spring 1990.

Nuclear fuel continues to be one of Santee Cooper's most economic energy sources, averaging only about one-third of the cost of fossil fuel. During the six-month period ending December 31, 1989, Summer Station's electrical generation reduced Santee Cooper's fuel costs by $11,955,000, compared to an equivalent amount of energy produced by fossil fuel.

Production Engineering and Construction Management

The $2.8 million Central Maintenance Complex at Winyah Station was completed on schedule in September and was immediately used in rebuilding Jefferies Hydro Unit No. 1 turbine components.

A new data acquisition system for Grainger was delivered, installed, programmed, and started up during October and November.

Initial improvements were completed on the fire protection systems at Jefferies, Winyah, and Cross stations, and design started for the second-phase improvements. The addition of sprinkler heads, hose stations, and yard hydrants resulted in a reduction in annual insurance premiums.

The exhaust ductwork for the flue-gas desulfurization system on Units No. 2 and 4 at Winyah Station was modified by the installation of a protective layer of corrosion-resistant metal over the existing carbon steel material. This greatly reduces yearly maintenance costs and extends the life of the ductwork.

Additional sootblowers were installed on the steam generators Units No. 3 and 4 at Winyah Station to increase the thermal efficiency of the units and to improve their availability.

Construction management was provided for infrastructure development of the Atlantic Center for Business and Industry in Conway and to assist Horry County with improvements to their buildings within the park.

Construction management assistance was also provided at the Moncks Corner office annex to expedite completion and to control expenditures. Hurricane Hugo extensively damaged the work in progress and set back the occupancy date for the building.

A contract was awarded and work began on the $2.3 million Interpretive Center and exhibit display at the Old Santee Canal State Park. Construction management and engineering assistance is being provided on behalf of the South Carolina Department of Parks, Recreation and Tourism.

Property Management

The Property Management unit administered 4,350 leases bordering the 152,688-acre Santee Cooper lakes. This is part of the total project of approximately 178,744 acres of land and water resources. The leases include 2,937 recreational lots in Santee Cooper subdivisions, 1,278 marginal lots adjacent to privately-owned subdivisions, 95 commercial lots, 40 gratis leases to public and quasi-public agencies, and various miscellaneous leases for public recreational facilities.

Revenues from these leases totaled $289,291 for the six-month period ending December 31.

The Old Santee Canal State Park, a cooperative project between Santee Cooper and the South Carolina Department of Parks, Recreation and Tourism, opened to the general public on June 1. Boat docking facilities, observation stations, over two and one-half miles of boardwalks and walking trails, and the restored Stony Landing Plantation House are available for enjoyment on the 200-acre historical and environmental park which is located on the Cooper River near Santee Cooper's corporate headquarters in Moncks Corner.

As a result of Hurricane Hugo, Santee Cooper's woodlands, totaling approximately 28,000 acres, were severely damaged. Approximately 18,900 acres of prime wildlife habitat leased at no cost to the South Carolina Wildlife and Marine Resources Department for use as part of the State's Wildlife Game Management Area Program, were devastated.

Damage to timber resources on Santee Cooper lands is estimated at $32.5 million. Forty-three contracts were awarded to remove downed and damaged timber from Santee Cooper woodlands in the five counties surrounding the lakes. Stumpage prices for timber and pulpwood products are approximately 40 to 50 percent of prehurricane prices.

Because of the damaged timber and pulpwood, a dangerous wildfire situation developed in the woodlands. Using large bulldozers, the Forestry and Undeveloped Land unit established firebreaks adjacent to Santee Cooper subdivisions and other developed areas, as well as in young pine plantations. Roads have been opened within wooded areas to suppress wildfires that might occur. Fire fighter training was scheduled for all employees who may be involved in fire fighting activities, and protective clothing and survival gear was purchased for their protection.

In developed areas, Santee Cooper coordinated with local counties and the Federal Emer-

gency Management Agency to provide debris removal within subdivisions, commercial areas, and public recreational facilities. The majority of debris was cleared from Santee Cooper leased areas prior to the end of the year.

Environmental Resources

Environmental Resources acquired $473,000 in federal and state funds from the South Carolina Aquatic Plant Management Council for aquatic weed control activities in Lakes Marion and Moultrie during 1990. The funding was coordinated by the South Carolina Water Resources Commission. Santee Cooper provides between 15 and 75 percent in matching funds to support various aspects of this program.

Plans were finalized for the second year of a three-year effort to release triploid (sterile) Chinese grass carp into the Santee Cooper lakes for aquatic weed control. Extensive research to determine the impact of the grass carp on the water quality of the lakes was conducted, with primary funding by the United States Army Corps of Engineers Waterways Experiment Station.

Efforts were begun to increase production of triploid grass carp at Santee Cooper's Aquaculture Facility at Winyah Station to supplement the grass carp stocking program at Lake Marion.

A feasibility study was begun to determine how the water quality laboratory program could better serve other Santee Cooper programs by conducting required analyses in-house.

Mosquito Abatement

More than 7,500 entomological inspections were conducted in the five-county area around the Santee Cooper lakes to collect data for mosquito control assessment and planning.

In the mosquito control program, more than 209,400 acres of land and water were treated. Coppice clearing and ditch maintenance, draining, and filling were conducted on more than 245 acres to reduce breeding sites. Biological control using *Gambusia affinis*, the mosquito fish, and the bacterial spore suspension of *Bacillus thuringiensis* were used in suitable areas.

A severe outbreak of flood water mosquitoes occurred in October following Hurricane Hugo. Aerial and ground applications of approved insecticides on over 100,000 acres throughout Santee Cooper lands controlled the outbreak within two weeks.

Water Quality Management

Extensive efforts were made to determine the impact of Hurricane Hugo on the overall water quality of the Santee Cooper lakes.

Studies were conducted to evaluate the impact of the GSX Hazardous Material Disposal Site located near Lake Marion, to determine the nutrient loading of the Santee Cooper lakes, to evaluate the impact of the stocking of sterile grass carp on the water quality of Lake Marion, and to monitor dissolved oxygen levels in the headwaters of Lake Marion. These studies were conducted in cooperation with the United States Geological Survey, South Carolina Wildlife and Marine Resources Department, and United States Army Corps of Engineers.

The water quality laboratory performed 11,389 analyses during the six-month period. The laboratory also supported programs for Performance and Environmental Services, as well as for Cross and Jefferies stations.

Aquatic plant control was conducted on 148 acres of noxious aquatic vegetation. Scheduled fall aerial herbicide applications on some 1,500 acres of vegetation were cancelled due to Hurricane Hugo.

Aquaculture

More than 30,000 Chinese grass carp, 280,000 *Tilapia*, and 2,000 pounds of catfish were produced by the Aquaculture unit at Winyah Station during the six-month period.

An additional 1,000 grass carp were certified triploid and prepared for stocking in Santee Cooper waters, but stocking was postponed due to Hurricane Hugo. For aquatic weed control at generating facilities, 37,000 *Tilapia* were stocked in Winyah Cooling Reservoir and 12,000 *Tilapia urea* were stocked in the ash pond at Winyah Station. *Tilapia* were also stocked in the raceway system for spring marketing and stocking.

The Aquaculture unit continued its cooperative program with the University of South Carolina in training Peace Corps volunteers preparing to teach aquaculture in third-world countries.

Corporate Communications

Hurricane Hugo presented the major communications challenge faced by Santee Cooper during the calendar year. With the total loss of generating capacity and power delivery to more than 89,000 customers, top priority was given to providing accurate and timely information to customers, employees, and the general public.

A telephone hotline was operated to provide continuous updates to customers on the status of power recovery, restoration of distribution lines, and the dangers of downed power lines. Morning and afternoon reports were made directly to the media and through the remote television and radio coverage provided from the Emergency Operations Center in Charleston.

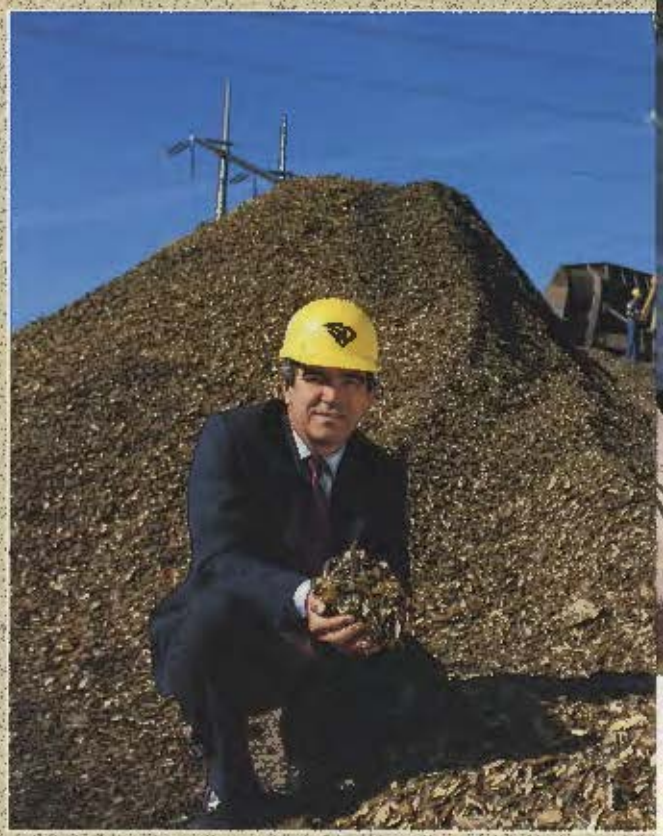
Photographic and video documentation was provided for storm damages, disruption of customer service, and recovery efforts. Newspaper ads and radio commercials were produced, thanking customers for their patience, courage, and understanding.

A series of television commercials was produced to salute the courage and strength of the people during the crisis situation. The central theme was, "When Hurricane Hugo struck, the greatest surge of power came from the people of South Carolina."

"Bringing Back The Light," a one-hour video documentary which captured the wrath and recovery of Hurricane Hugo, was produced by Corporate Communications, in cooperation with local television stations, the Electric Cooperatives of South Carolina, and the South Carolina Educational Television Network. This

"This was as close to a wartime scenario as we've had here. This is what we train for." ☐ Colonel John H. Crownover III, the group commander of the 437th Air Base Group at the Charleston Air Force Base, is a man who must be prepared for war. Hurricane Hugo, with wind gusts in excess of 150 mph, assaulted the Military Airlift Command base like a merciless, conquering foe. The toll: • thirty-two million dollars in damages, with $5.5 million of that total in supplies and equipment; • approximately 3,800 downed trees; • severe damage to base hangars which house maintenance facilities for the C-141 Starlifter jet transport and gigantic C-5 Galaxy; • the destruction of a new $1.7 million noncommissioned officers' club • some form of damage to 800 of the 944 family housing units. ☐ "There was no time we couldn't carry out our mission," Crownover says proudly. Ironically, the Charleston Air Force Base flew Hugo relief missions to Puerto Rico only days before the storm struck the Lowcountry. ☐ When Hugo targeted Charleston, a disaster plan went into effect which addressed anticipated danger from downed power lines. For example, Crownover says part of that plan included cutting off electricity at the Santee Cooper substation that serves the base. ☐ Approximately 90 percent of the power lines, strung on 120 utility poles, fell victim to the storm. Fifty transformers were casualties. Electricity, supplying the basics of light, hot water, and refrigeration, came from 10 emergency generators at the base. ☐ Sixty generators were also shipped from Air Force bases throughout the United States. Outside military personnel were brought in to repair electric lines at the base, the workplace for more than 8,000 Air Force personnel and 1,400 civilians. ☐ "For the electricians, this was their time for glory," says Crownover. "They were the most important people in the world. I can't tell you how many slept in their trucks." ☐ After repair work was completed on September 27, Santee Cooper was ready to again feed power to the base, one of the utility's three military customers. ☐ "Everyone did an extraordinary job," Crownover says. "It was a mirror image of what happened in the community. It was real easy for me. I just had to watch." He says the storm will cause other bases to take a hard look at how they react to disasters. ☐ "We had a plan, and we knew what we were going to do," says Crownover. "It was incredible. I've never seen people come together with such efficiency. We use the theme, 'Team Charleston.' And that's what we are, a team. We pulled together."

"When life hands you lemons," the saying goes, "make lemonade." *But Bill McCall Jr., vice president, Production Operations, has paraphrased that adage to read: "When a hurricane hands you waste wood, make wood chips into electricity."* ☐ *McCall's innovative concept to burn the many tons of wood brought to the surface of Lake Marion after Hurricane Hugo didn't exactly get an enthusiastic reception when he ran it by executive management. After all, the burners at Santee Cooper's Jefferies Station are designed to burn coal, not wood that's spent almost 50 years lying at the bottom of a lake.* ☐ *Executive vice president Robert Tanner gave him a cautious go-ahead. McCall then proceeded with the experiment.* ☐ *It's a simple operation. A small tractor with a front-end loader dumps the wood chips into a hopper. A conveyor belt then moves the appropriate amount of wood chips and dumps them on top of the fast-moving conveyor belt of coal making its long trip to the boiler.* ☐ *"When wood is burned as a fuel, you normally have a boiler that has a grate in it so you can burn your wood very slowly," says McCall. "To successfully burn the wood and coal mixture, you have to burn it within the first couple of seconds after admitting it into the boiler. To do that you have to grind it very fine.* ☐ *"We're using approximately 10 percent wood with 90 percent coal, running it on our belts and through the crusher to mix it thoroughly. We're grinding it in our pulverizers and then blowing it into the burners. It's burning quickly, and we're not having any problems with it. We had to play around a little bit with the mixture, but we've got it right."* ☐ *McCall's experiment attracted the attention of Riley Stoker, the Worchester, Massachusetts company that manufactured the boiler. They were impressed by what they saw.* ☐ *"We may be the first utility in the country to experiment with burning wood chips in boilers designed solely for coal," McCall says. "We began a few weeks before Christmas." The operation burns approximately 500 tons a week at 10 tons per hour when the Jefferies Station is operating. But perhaps the best thing about the operation is that start-up costs were practically nil.* ☐ *"That's the beauty of this experiment," McCall says. "We're using our existing people, and we've not put out any extra dollars for manpower. We're saving approximately $60 to $80 an hour in fuel costs by burning this wood. That adds up to as much as $50,000 per month, which helps us hold down costs to our customers."* ☐ *On December 23, when Santee Cooper set an all-time peak demand for electricity, little did customers know wood from Hugo was helping them keep warm. "One of America's most resourceful electric utilities" was a Santee Cooper slogan a few years ago. Bill McCall and his wood chip experiment proves resourcefulness – even when it means not going by the book – is still practiced here.*



video chronicle of the effects of the nation's worst storm of the century was distributed to all school, university, and public libraries in the state.

A promotional program designed to increase public awareness and use of the Old Santee Canal State Park was developed, but not implemented because of Hurricane Hugo. It includes newspaper and television ads, billboards, brochures, and a variety of promotional items. The promotion will begin as soon as cleanup and recovery operations are completed in mid-1990.

A computer graphics system was installed to improve communications support and efficiency in the design, editing, and delivery of visual presentations. It provides capabilities for in-house production of slide and video presentation materials.

Santee Cooper's annual report for fiscal year 1989 won the top honor, a gold award, in the annual competition sponsored by the Advertising Federation of Charleston. Santee Cooper also won silver awards for a 30-second radio commercial and for a promotional piece for the grand opening of the Old Santee Canal State Park. The cover photo for the 1989 Annual Report won a bronze award. First-place recognition was also received from the United States District Three of the International Association of Business Communicators for "A Very Special Place," the multi-image slide presentation about the Old Santee Canal State Park.

Employee Relations

Santee Cooper hired 35 new employees from July 1 through December 31, for a total of 1,607 regular employees. Promotions to greater responsibility were given to 25 employees. Productivity or safety suggestions submitted to the company's Suggestion Program totaled 23.

After Hurricane Hugo, Employee Relations personnel were heavily involved in helping Santee Cooper employees and people in the communities impacted by the storm. These efforts included developing and administering an employee relief effort which collected and distributed food, clothing, and over $3,000 to company employees and their families; appearing on the Oprah Winfrey Show which brought in donations to the American Red Cross for the hurricane-battered areas; visiting electric customers on life-support equipment to ensure their needs were met; cleaning clothes for the many contract line workers; working in a local restaurant to assist in preparing meals for the line workers; and operating Somerset Point, an employee recreational area, as a lodging facility for contract crews.

Occupational Health

In addition to the 580 examinations performed by Santee Cooper nurses from July through December, counseling was also provided to 81 employees, with referrals for needed services to another 153 employees.

The Occupational Health staff provided 45 preplacement physicals during this period. The staff assisted in the coordination and training of employees in basic cardiopulmonary resuscitation and first aid, a benefit for Santee Cooper and the communities in which employees work and live.

Training and Development

During the recovery from Hurricane Hugo, Training and Development organized and assisted in providing personnel. They performed a variety of duties which included delivering lunches to line crews in outlying areas and assisting in repairing transmission and distribution systems in Santee Cooper's service areas.

A total of 239 internal and external training programs in various subject areas of management, professional, technical, and skills development were attended by 1,833 employees. The corporate training course catalog was revised and updated to reflect available training.

Various training courses and materials were updated and video programs, cassette courses, books, and other self-study courses were added to the lending library.

Courses leading to two- and four-year college degrees and graduate degrees were completed by 220 employees with the help of the tuition aid program. Degrees were received by seven employees.

Safety

Santee Cooper continues to be recognized by the state and the American Public Power Association for its safety record among electric utilities. The 1989 lost-work-day incident rate of approximately 0.18 is the fourth-best record since 1964. This is an exemplary feat by Santee Cooper employees, especially considering the extremely hazardous working conditions during and after Hurricane Hugo.

Organizational units eligible for awards from the National Safety Council and the South Carolina Occupational Safety Council totaled 25. The following units received the Award of Merit for no recordable injuries: Darlington and Orangeburg area transmission units, Lake Marion Maintenance, Horry-Georgetown Technical Services, and Horry-Georgetown area transmission units. Eighty-seven units are eligible for the President's Award for no disabling injuries while operating under hazardous conditions.

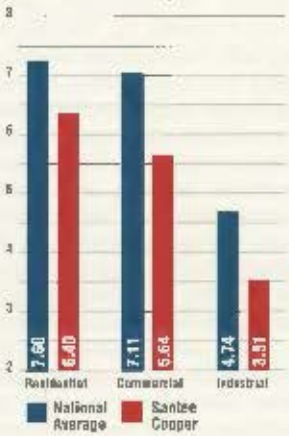
Safe service awards were presented to 288 employees; Safe driver awards were given to 136 employees; and two employees were cited for avoiding injury as a result of wearing protective devices or equipment. Three employees were recognized for outstanding leadership in units operating for 20 years without a disabling injury.

Workers' Compensation payments to employees and medical suppliers were reduced by 45 percent as a result of the utility's improved safety record.

During the storm emergency caused by Hurricane Hugo, Safety employees, in addition to performing their normal duties, were responsible for providing accommodations and portable generator power for emergency crews, totaling 421 people; distributing safety equipment to line workers; assisting distribution crews in connecting residential service; and locating damaged service to residents.

Rates

Cents/KWH (Calendar Year 1989) Compared with utilities based on the national average



Fuel Procurement

The Fuel Procurement unit purchased and transported over 4.5 million tons of coal from eastern Kentucky coal fields to Santee Cooper generating stations. Seventy percent of the coal was purchased under long-term contracts, and 30 percent was purchased on the spot market at competitive delivered costs.

As of December 31, Santee Cooper owned 409 coal cars and leased an additional 140 cars for moving coal to the generating stations. During 1989, Santee Cooper realized net savings of approximately $3.3 million through the use of owned and leased rail cars.

A car shop facility at Winyah Station, which was completed in 1986, continues to reduce rail car maintenance costs and provide control of running car repairs.

Over 40 rail cars at Cross Station were derailed as a result of Hurricane Hugo. All of these cars were repaired and available for use by the end of the year.

Purchasing, Contract Administration, and Reclamations

Purchasing, Contract Administration, and Reclamations units were tested fully as a result of Hurricane Hugo. Prior to the storm, each area prepared by taking necessary actions to facilitate the acquisition of materials and services in the event they would be needed. Key vendors and contractors were contacted to update emergency phone numbers, and backup communications were established.

After the storm, the procurement effort began immediately. Some personnel were assigned to perform other, but related, duties in warehousing, while buyers conducted an around-the-clock search for materials and services. Although telephone service was never lost, circuits were extremely busy. This problem was partially overcome by several dependable suppliers who anticipated our needs and took the initiative to call, with continued calling periodically throughout the first weekend.

To ensure a continuous flow of needed materials, personnel worked with other units to assure that needed materials and services were never lacking to support the efforts of restoring the system.

During the two-week period immediately following the hurricane, over 150 emergency purchase orders, in addition to more than 400 regular orders and contracts, were issued. These orders for Hugo-related materials and services exceeded $10 million.

Reclamation of materials lost or destroyed by the storm continues as debris is removed from rights-of-way.

Material Control

The Material Control System, currently supporting 70 corporate warehouse locations, houses over 72,000 cataloged items valued in excess of $20 million. Accurate inventory information was critical preceding and following Hurricane Hugo.

When the mainframe computer system went down following Hurricane Hugo, Material Control was able to provide management with a temporary material tracking and status system for critical items by combining manually computed data with quickly written programs using personal computers.

With the assistance of volunteers from Accounting, Engineering, Material Coordination, and Reclamation, the equivalent of 30 days of transactions were processed in 36 hours to restore the Material Control System to its on-line status.

Corporate Administrative Services

During Hurricane Hugo, the roof over the CAS portion of the Operations Center was destroyed. Reprographic equipment and supplies were completely lost.

In the aftermath, CAS employees were involved primarily in the cleanup and restoration of this area. With one switchboard lost and the other relocated to the main building, approximately 700 phone extensions were turned off to allow for emergency work activities only. They were reinstated gradually as the telephone system became available. Corporate travel reservations were cancelled and only emergency reservations were made. Also, the desktop publishing system was disrupted for two weeks. CAS employees assisted in the volunteer support unit established in the aftermath.

Central Stores

During the six-month period ending December 31, a total of 3,200 receipts and 350 outbound shipments were processed. The amount of material issued and returned to Central Stores was valued at $3.1 million.

Working together with volunteers from Planning and Operations, Production, and Administration and Finance, Central Stores provided 24-hour support to approximately 40 line crews during Hurricane Hugo.

The quantity of transmission and distribution materials received and issued quadrupled during the Hugo emergency, compared to normal operations.

Efforts were concentrated on purchasing, receiving, and issuing materials as quickly as possible to supply the necessary items needed to restore the system.

Program for Employee Participation

The role of the Program for Employee Participation (PEP) was temporarily changed in the aftermath of Hurricane Hugo. On the Monday after the storm, corporate management asked the PEP unit to organize, staff, and operate a volunteer services effort to provide much-needed logistical support to crews involved in recovery efforts. Employees were recruited from office areas such as Accounting, Employee Relations, Design Engineering, and Management Information Systems to do a variety of tasks which kept line crews focused on repairing damaged lines.

During the three-week period that volunteer services existed, over 180 employee volunteers completed 154 work order requests. These requests included tasks such as delivering lunches to field crews, providing laundry services to contract crews, answering hotline phones, moving cots and mattresses, and cleaning up debris.

Even though PEP teams were slowed down a bit by the hurricane, overall progress was still realized. Employees participating on teams rose to 654, and the total number of teams increased to 115, reflecting increases of 45 percent and 74 percent, respectively. For the six-month period, 23 projects were completed.

Corporate Forecasting, Rates and Statistics

The results of Santee Cooper's efforts to improve customer relations were clearly demonstrated following the devastation caused by Hurricane Hugo. Immediately following the storm, direct liaisons were established to coordinate recovery efforts with industrial customers and cooperatives.

Because of the relationships established with each industrial customer and the meetings of the Industrial Customer Association, the problems of those customers left without electrical power and the impact on their manufacturing process were understood. Each industrial customer was kept informed of the restoration process.

One of the tools Santee Cooper is using to improve operations is the Corporate Key Indicator Program (CKI), which compares key financial and operational ratios to those of similar utilities. Based on the latest CKI results, Santee Cooper remains a leader in providing dependable, low-cost electricity through efficient operations.

With the assistance of Stone & Webster Management Consultants, a long-range forecast of demand and energy requirements for all Santee Cooper customers was prepared. The forecast was conducted as part of a complete planning study aimed at identifying the most economical resource addition to meet future customer needs.

Management Information Systems

It was fortunate that Management Information Systems (MIS) began preparing its new, comprehensive Disaster Recovery Plan in early September. Two weeks later, the infant plan had its first test: Hurricane Hugo.

In preparation for the potential hurricane impact, the staff obtained original documentation, computer forms, and a complete copy of all computer data, and stored them in a vault. A second copy of all data was taken to another facility out of the projected path of the hurricane. The entire mainframe computer network was shut down twelve hours before Hurricane Hugo hit.

After the mainframe was shut down, MIS personnel assisted personal computer users in the backup and shutdown of their systems.

The Disaster Recovery planning effort, the dedication of all of the MIS staff, and the absence of physical damage to the data center enabled MIS to restore the main computer equipment and critical systems to working order within 72 hours after Hugo hit, with no loss of data or programs.

MIS reorganized its staff in September to improve services provided to users. During the six-month period, several external projects were completed. A computerized plant maintenance system was brought on-line at three generating stations; a PC-based accounts receivable system was implemented; a local area network of five personal computers was installed and used for the Mini-Bond sale; and the IBM mainframe was connected to the Prime and VAX machines. Hardware, software, and internal procedures were also updated during this period.

Treasury

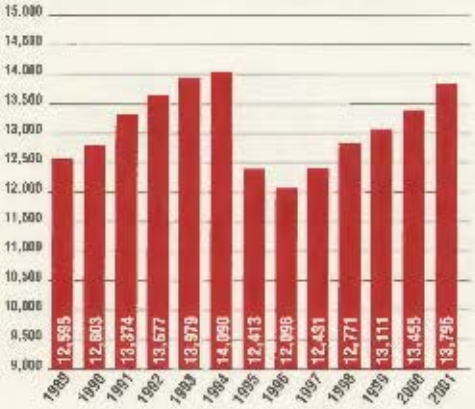
The second successful Mini-Bond sale was completed in October, despite a one-month interruption by Hurricane Hugo. Once again, orders totaled over $17 million. In addition to the current interest-bearing bonds previously offered, Capital Appreciation Bonds were offered for the first time.

The Mini-Bonds were scheduled to be sold at the September 25 board meeting, the Monday following Hugo. Because of Hugo, this meeting was cancelled, and the bonds were sold at the October board meeting. Due to extensive damage sustained by many customers, Mini-Bond purchasers were allowed to cancel orders prior to the sale date without penalty.

In addition to the Mini-Bond sale, the board authorized an increase in Santee Cooper's highly successful commercial paper program from $50 million to $100 million. The additional paper will be issued during 1990 as needs arise.

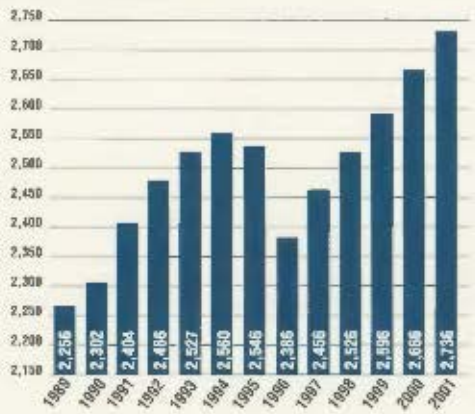
Total Energy Forecast (GWH)

Calendar Year / GWH



Total Peak Demand Forecast (MW)

Calendar Year / MW



Balance Sheets

South Carolina Public Service Authority
December 31, 1989 and 1988

Assets	1989	1988
	(Thousands)	
Utility Plant — At Cost:		
Electric plant in service	$ 2,184,032	$ 2,136,296
Construction work in progress	124,400	94,576
Total	2,308,432	2,230,872
Less accumulated depreciation	573,785	511,098
Electric plant — net	1,734,647	1,719,774
Nuclear fuel — net	26,462	27,248
Utility plant — net	1,761,109	1,747,022
Other Physical Property (Net of Accumulated Depreciation)	1,350	363
Cash and Investments Held by Trustee (Designated)	253,955	289,130
Current Assets:		
Cash and investments held by trustee	40,869	38,284
Accounts receivable, less allowance for doubtful accounts of $1,232,000 in 1989 and $1,105,000 in 1988	61,887	48,588
Accrued interest receivable	3,622	3,888
Inventories, at average cost:		
Fuel (coal and oil)	41,119	28,213
Materials and supplies	23,638	15,936
Prepaid expenses	943	851
Total current assets	172,078	135,760
Deferred Debits:		
Unamortized debt expense	14,879	15,607
Unamortized loss on refunded debt	231,385	239,579
Costs to be recovered from future revenue	266,338	237,545
Other	20,327	8,460
Total deferred debits	532,929	501,191
Total	$ 2,721,421	$ 2,673,466

The accompanying notes are an integral part of the financial statements.

Liabilities and Capitalization	1989	1988
	(Thousands)	
Long-Term Debt:		
Electric Revenue Bonds - Priority Obligations	$ 54,415	$ 56,530
Electric System Expansion Revenue Bonds	1,780,835	1,798,265
Subtotal	1,835,250	1,854,795
Electric System Revenue Bonds	81,000	94,500
Capitalized lease obligations	64,709	67,522
Total long-term debt	1,980,959	2,016,817
Less:		
Reacquired debt	3,345	1,820
Unamortized debt discount and premium — net	22,526	23,808
Long-term debt — net	1,955,088	1,991,189
Accrued Interest on Long-Term Debt	65,257	61,573
Construction Fund Liabilities — Accounts Payable	3,283	3,339
Other Non-current Liabilities	15,290	10,494
Current Liabilities:		
Commercial paper notes	50,000	50,000
Electric System Revenue Bonds - Mini-Bonds	34,415	17,012
Accounts payable	33,570	29,094
Customer deposits	4,877	4,762
Accrued sums in lieu of taxes	1,761	1,666
Accrued nuclear fuel reload	8,517	31
Customer's credits	6,622	2,269
Other	3,081	1,065
Total current liabilities	142,843	105,899
Commitments and Contingencies		
Deferred Credits:		
Unamortized gain on reacquired debt	676	315
Nuclear fuel settlement	8,049	7,848
Total deferred credits	8,725	8,163
Capital Contributions — U.S. Government Grants	34,438	34,438
Accumulated Earnings Reinvested in the Business	496,497	458,371
Total	$ 2,721,421	$ 2,673,466

Statements of Accumulated Earnings Reinvested in the Business

South Carolina Public Service Authority
Years Ended December 31, 1989 and 1988

	1989	1988
	(Thousands)	
Accumulated earnings reinvested in the business — beginning of year	$ 458,371	$ 419,203
Reinvested earnings for the year	43,492	43,259
Total	501,863	462,462
Distribution to the State of South Carolina (See note below)	5,366	4,091
Accumulated earnings reinvested in the business — end of year	$ 496,497	$ 458,371

Note: The distribution to the State of South Carolina is determined utilizing a calculation formula required under the indenture which is based essentially on operating cash flow and mandatory reserve requirements. Such calculation varies substantially from reinvested earnings for the year principally due to costs to be recovered from future revenue and working capital requirements.

The accompanying notes are an integral part of the financial statements.

Statements of Reinvested Earnings

South Carolina Public Service Authority
Years Ended December 31, 1989 and 1988

	1989	1988
	(Thousands)	
Operating Revenues:		
Sales of electricity	$ 549,578	$ 500,308
Other operating revenues	5,216	4,640
Total operating revenues	554,794	504,948
Operating Expenses:		
Operation expense:		
Production	248,231	214,935
Purchased and interchanged power — net	8,007	1,741
Transmission	2,375	2,529
Distribution	2,696	3,529
Customer accounts	3,531	3,450
Sales	735	493
Administrative and general	38,873	33,089
Maintenance expense	37,561	35,343
Total operation and maintenance expense	342,009	295,109
Depreciation	69,570	67,837
Sums in lieu of taxes	3,449	3,196
Total operating expenses	415,028	366,142
Operating Income	139,766	138,806
Other Income:		
Interest income	24,461	25,303
Other — net	(41)	(130)
Total other income	24,420	25,173
Subtotal	164,186	163,979
Interest Charges:		
Interest on long-term debt	133,606	136,738
Other	15,881	10,226
Total interest charges	149,487	146,964
Subtotal	14,699	17,015
Other:		
Costs to be recovered from future revenue	28,793	26,244
Reinvested Earnings	$ 43,492	$ 43,259

The accompanying notes are an integral part of the financial statements.

Statements of Cash Flows
Increase (Decrease) in Cash and Cash Equivalents

South Carolina Public Service Authority
Years Ended December 31, 1989 and 1988

	1989	1988
	(Thousands)	
Cash Flows From Operating Activities:		
Reinvested earnings	$ 43,492	$ 43,259
Adjustments to reconcile reinvested earnings to net cash provided by operating activities:		
Depreciation and amortization	69,570	67,837
Amortization of bond related expenses	10,145	6,489
Costs to be recovered from future revenue	(28,793)	(26,244)
Nuclear fuel settlement	201	(8,591)
Changes in assets and liabilities:		
Accounts receivable and accrued interest	(13,033)	(5,705)
Inventories	(20,608)	(3,537)
Prepaid expenses	(92)	47
Other deferred debits	(3,898)	(1,730)
Accounts payable	3,969	6,803
Other current liabilities	15,066	(3,231)
Accrued interest on long-term debt	3,684	(6,695)
Other non-current liabilities	4,796	3,027
Net cash provided by operating activities	84,499	71,729
Cash Flows From Investing Activities:		
Net decrease (increase) in investments	16,289	(1,883)
Expenditures for utility plant	(85,153)	(71,764)
Increases in other deferred debits	(232)	—
Sale of plant assets	509	588
Increase in construction fund liabilities	451	2,399
Decrease in cash and investments Held by Trustee (Designated)	35,175	22,718
Net cash used in investing activities	(32,961)	(47,942)
Cash Flows From Financing Activities:		
Proceeds from bonds	17,403	205,587
Repayment and refunding of bonds	(34,570)	(202,676)
Unamortized bond-related expenses	420	(16,959)
Distribution to the State of South Carolina	(5,366)	(4,091)
Increases in other deferred debits	(7,737)	—
Other	(2,811)	(2,832)
Net cash used in financing activities	(32,661)	(20,971)
Net Increase in Cash and Cash Equivalents	18,877	2,816
Cash and Cash Equivalents at the Beginning of the Year	8,355	5,539
Cash and Cash Equivalents at the End of the Year	$ 27,232	$ 8,355
Reconciliation of Cash and Cash Equivalents:		
Cash and cash equivalents at the end of the year	$ 27,232	$ 8,355
Investments, not considered cash and cash equivalents	13,637	29,929
Cash and investments held by trustee (as shown on balance sheet)	$ 40,869	$ 38,284
Supplemental Disclosure of Cash Flow Information:		
Cash paid during the year for:		
Interest	$ 138,516	$ 139,998
Cash received during the year for:		
Interest	$ 22,422	$ 21,759

The accompanying notes are an integral part of the financial statements.

Note 1 — Summary of Significant Accounting Policies:

A — Reporting Entity — The South Carolina Public Service Authority (the "Authority"), a component unit of the state of South Carolina, was created by the 1934 State Legislature. The Board of Directors is appointed by the Governor of South Carolina. The purpose of the Authority is to provide electric power to the people of South Carolina. Capital projects are funded by bonds issued by the Authority and internally generated funds. The Board of Directors sets rates charged to customers to pay debt service, operating expenses and provide funds required under bond covenants.

B — Changes in Reporting Period — The Financial Statements present the financial position, results of operations and cash flows of the Authority for the years ended December 31, 1989 and 1988. During the year the Authority changed its financial reporting period from a June 30 year end to a calendar year end.

C — System of Accounts — The accounting records of the Authority are maintained substantially in accordance with the Uniform System of Accounts prescribed by the Federal Energy Regulatory Commission (FERC).

D — Utility Plant Capitalization and Maintenance — Additions to plant are recorded at cost, which includes material, labor, overhead, and interest capitalized during construction. The costs of repairs and minor replacements are charged to appropriate operating and maintenance expense. The costs of renewals and betterments are capitalized. The original cost of utility plant retired and the cost of removal less salvage are charged to accumulated depreciation.

E — Depreciation — Depreciation is computed on a straight line basis over the estimated useful lives of the various classes of the plant. Annual depreciation provisions, expressed as a percent of average depreciable utility plant in service, were approximately 3.3% for each of the two years in the period ended December 31, 1989. Amortization expense of capitalized leases is included in depreciation expense.

F — Revenue Recognition — Substantially all wholesale and industrial revenues are billed and recorded at the end of each month. Revenues from retail customers are recognized as billed on a monthly cycle basis. Fuel costs are reflected in operating expenses as consumed.

G — Amortization — Unamortized debt discount, premium and expense are amortized to income over the terms of the related debt issues. Unamortized gains or losses on refunded debt are amortized to income as impacted through the rate-making process, generally over the terms of the new debt issues.

H — Cash Flow — The Authority adopted Statement of Financial Accounting Standard No. 95, "Statement of Cash Flows," during 1989 and has restated the prior year's financial statements presented to include statements of cash flows consistent with the current year's presentation. For purposes of the statements of cash flows, the Authority considers highly liquid investments with a maturity of less than three months and cash on deposit with financial institutions as cash and cash equivalents. Cash and Investments Held by Trustee (Designated) are not included in cash and cash equivalents for the purpose of the statements of cash flows.

Note 2 — Costs to be Recovered from Future Revenue:

The Authority's electric rates are established based upon debt service and operating fund requirements. Depreciation is not considered in the cost of service calculation. This results in timing differences between costs as defined in the rate-making process and costs determined in accordance with generally accepted accounting principles. These differences are recognized as costs to be recovered from future revenue. The recovery of outstanding amounts associated with costs to be recovered from future revenue will coincide with the retirement of the outstanding long-term debt of the Authority.

For the years ended December 31, 1989 and 1988, costs to be recovered from future revenue included in the statement of reinvested earnings consists principally of the difference between depreciation and debt service requirements.

Note 3 — Cash and Investments Held by Trustee (Designated):

Unexpended funds from the sale of expansion bonds, debt service funds, other special funds and cash and investments are held and maintained by trustees and their use designated in accordance with applicable provisions of various trust indentures, bond resolutions, lease agreements, and the Enabling Act included in the South Carolina law. Such funds consist principally of investments in government securities carried at amortized cost.

CASH — Cash is categorized as follows: Category 1 includes bank balances entirely covered by federal depository insurance. Category 2 includes bank balances that are uncollateralized or collateralized with securities held by pledging financial institutions but not in the Authority's name.

INVESTMENTS — Trust indentures and resolutions authorize the Authority to invest in obligations of the U.S. Treasury, agencies, instrumentalities, and certificates of deposit. The Authority's investments consist of U.S. Government securities, certificates of deposit and repurchase agreements. The Authority requires that securities underlying repurchase agreements have a market value of at least 102 percent of the cost of the repurchase agreement. Securities underlying repurchase agreements are delivered by broker dealers to the Authority's trust agents. At December 31, 1989, the Authority's repurchase agreements totalled $33,200,000.

The Authority's investments are categorized (See following page.) to give an indication of the level of risk assumed by the entity at year-end. Category 1 includes investments that are insured or registered or for which the securities are held by trust agents in the Authority's name. Category 2 includes uninsured certificates of deposit which are collateralized with securities held by the pledging financial institution but not in the Authority's name.

	1989					
	Investments		Cash		Total	
	Category 1	Category 2	Category 1	Category 2	Carrying Value	Market Value
	(Thousands)					
Cash and Investments Held by Trustee (Designated):						
General Improvement Funds	$ 9,541	$ 100	$ —	$ (637)	$ 9,004	$ 9,009
Debt Service and Special Funds						
Indentured Bonds						
Interest Fund	$ 1,060	$ —	$ —	$ —	$ 1,060	$ 1,060
Bond Fund	1,161	—	—	—	1,161	1,161
Debt Service	8,896	—	—	—	8,896	9,073
Expansion Bonds						
Interest Fund	—	—	—	60,731	60,731	60,731
Bond Fund	9,270	—	—	—	9,270	9,270
Debt Service	128,000	—	—	55	128,055	130,131
Subordinated Bonds						
Interest Fund	—	—	—	3,267	3,267	3,267
Bond Fund	6,750	—	—	—	6,750	6,750
Debt Service	3,719	1,350	—	7	5,076	5,041
Mini-Bonds						
Interest	902	—	—	—	902	902
Debt Service 1989 Issue	454	—	—	—	454	455
Debt Service 1988 Issue	659	—	—	—	659	679
Other Special Funds	24,462	—	—	(5,792)	18,670	17,725
Total	$185,333	$1,350	$ —	$58,268	$244,951	$246,245
Cash and Investments Held by Trustee:						
Revenue Fund	$ 36,391	$ —	$ —	$ 2,240	$ 38,631	$ 38,738
Special Reserve Fund	2,132	—	100	6	2,238	2,242
Total	$ 38,523	$ —	$100	$ 2,246	$ 40,869	$ 40,980

	1988					
	Investments		Cash		Total	
	Category 1	Category 2	Category 1	Category 2	Carrying Value	Market Value
	(Thousands)					
Cash and Investments Held by Trustee (Designated):						
General Improvement Funds	$ 52,784	$ 100	$ 3	$ (70)	$ 52,817	$ 52,782
Debt Service and Special Funds						
Indentured Bonds						
Interest Fund	$ 1,105	$ —	$ —	$ —	$ 1,105	$ 1,105
Bond Fund	1,059	—	—	—	1,059	1,059
Debt Service	8,763	—	—	—	8,763	8,823
Expansion Bonds						
Interest Fund	1,668	—	—	55,296	56,964	56,964
Bond Fund	8,514	—	—	206	8,720	8,694
Debt Service	129,992	—	—	10	130,002	128,648
Subordinated Bonds						
Interest Fund	—	—	—	3,746	3,746	3,746
Bond Fund	6,593	—	—	161	6,754	6,732
Debt Service	3,808	1,250	—	4	5,062	4,896
Mini-Bonds						
Interest	—	—	—	359	359	359
Debt Service	634	—	—	25	659	651
Other Special Funds	17,577	—	—	(4,457)	13,120	11,522
Total	$179,713	$1,250	$ —	$55,350	$236,313	$233,198
Cash and Investments Held by Trustee:						
Revenue Fund	$ 33,141	$ —	$ —	$ 834	$ 33,975	$ 33,975
Special Reserve Fund	4,173	—	—	136	4,309	4,290
Total	$ 37,314	$ —	$ —	$ 970	$ 38,284	$ 38,265

Note 4 — Long-Term Debt Outstanding:	December 31, 1989	1988
	(Thousands)	
Electric Revenue Bonds - Priority Obligations:		
Series of 1950, bearing interest at 2.70% and due 1990 to 1993	$ 7,915	$ 8,395
Series of 1967, bearing interest at 4.10% and due 1990 to 2006	46,500	47,075
Refunding Series of 1973, due 1989	-0-	1,060
Total Electric Revenue Bonds - Priority Obligations	54,415	56,530
Electric System Expansion Revenue Bonds:		
1973 Series, bearing interest from 5.25% to 5.75% and due 1990 to 1993 and 2013	89,435	90,750
1974 Series, bearing interest from 6.20% to 6.75% and due 1990 to 1999 and 2014	98,865	100,270
1977 Refunding Series, bearing interest from 5.20% to 6% and due 1990 to 1997 and 2002 and 2016	183,405	186,855
1977 Series, bearing interest from 4.80% to 5.75% and due 1990 to 2002 and 2017	111,275	111,815
1978 Series, bearing interest from 5.05% to 5.875% and due 1990 to 1998 and 2008 and 2018	192,645	193,845
1979 Series A, bearing interest from 5.75% to 6.875% and due 1990 to 2003 and 2009 and 2019	102,935	104,085
* 1980 Series A, bearing interest from 9.20% to 9.50% and due 1990 to 1995	8,570	9,605
* 1981 Series A, bearing interest from 8.30% to 9.30% and due 1990 to 1997	11,230	12,075
* 1981 Series C, bearing interest from 11.50% to 11.75% and due 1990 to 1991	2,255	3,220
* 1982 Series A, bearing interest from 11.50% to 11.75% and due 1990 to 1991	4,010	5,745
* 1982 Series B, bearing interest from 10.75% to 11.25% and due 1990 to 1992	3,195	4,030
* 1982 Refunding Series, bearing interest from 8.00% to 8.75% and due 1990 to 1994	3,205	3,710
* 1985 Refunding Series, bearing interest from 7.25% to 9.10% and due 1990 to 2000	8,910	9,400
* 1985 Refunding Series A, bearing interest from 7.00% to 9.00% and due 1990 to 1999 and 2003	51,940	52,300
1986 Refunding Series A&B, bearing interest from 6.75% to 8.10% and due 1991 to 2008 and 2019 and 2020	195,955	195,955
1986 Refunding Series C&D, bearing interest from 5.25% to 7.30% and due 1990 to 2007 and 2012 and 2021 and 2022	334,075	334,870
1987 Refunding Series A, bearing interest from 4.60% to 7% and due 1990 to 2007 and 2012 and 2021 and 2022	190,355	191,160
1988 Refunding Series A, bearing interest from 7% to 7.875% and due 1992 to 2006 and 2015 and 2021	188,575	188,575
Total Electric System Expansion Revenue Bonds	1,780,835	1,796,265
Electric System Revenue Bonds, 1985 Series, bearing interest from 7.40% to 8.70% and due 1990 to 1995	81,000	94,500
Capitalized Subordinated Lease Contracts, payable 1990 to 2015	64,709	67,522
Total Long-Term Debt	$1,980,959	$2,016,817

*See schedule for refunded debt.

The Authority refunds and defeases debt primarily as a means of reducing debt service, thereby postponing or reducing future electric rate adjustments. In 1988, the Authority issued $189 million in Electric System Expansion Revenue Bonds to advance refund certain maturities of the 1980 Series A and 1981 Series A expansion revenue bonds and certain maturities of the 1982, 1985 and 1985A Refunding Series Bonds. The 1980A, 1981A, 1982, 1985 and 1985A bonds (original bonds) totaled $172 million. The new bonds bear an average interest rate of approximately 7.8%. The original bonds averaged approximately 9.3%. The net proceeds of the bonds, $189 million (after payment of $.4 million and $1.4 million in underwriting fees and original issue discount) plus an additional $6.7 million were used to purchase U.S. Government securities. The securities have been placed in an irrevocable trust to provide for all future debt service payments on the original bonds. As a result, the original bonds are considered defeased and the liability for those bonds has been removed from the Authority's accounts.

Although the advance refunding resulted in a deferred accounting loss of approximately $28 million, the Authority was able to reduce its total debt service over the next 36 years by approximately $28 million and obtain an economic gain (the difference between the present values of the debt service payments on the old and the new debt) of approximately $10 million.

Amounts outstanding, original loss on refunding, and the unamortized loss at December 31, 1989 follow:

Refunding Issue	Refunded Bonds	Refunded Amount Outstanding	Original Loss	Unamortized Loss
		(Thousands)		
1977 Refunding	1971 and 1976 Series	$ —	$ 11,244	$ 6,575
1982 Refunding	$100,000 of the 1981 Series C and $127,000 of the 1982 Series A	227,000	62,588	2,739
1985 Refunding	$150,000 of the 1982 Series B	150,000	30,570	8,443
1985A Refunding	$139,000 of the 1981 Series B and $ 40,000 of the 1981 Series C	179,000	27,853	5,194
Cash Defeasance	$ 20,000 of the 1982 Series A	20,000	2,763	2,395
1986 A&B Refunding	$ 42,725 of the 1980 Series A $ 42,000 of the 1981 Series A $ 61,000 of the 1981 Series B $ 4,420 of the 1981 Series C $ 7,820 of the 1982 Series A $ 9,010 of the 1982 Series B	166,975	43,736	43,736
1986 C&D Refunding	$280,275 of the 1982 Refunding Series	280,275	97,109	89,700
1987 A Refunding	$160,510 of the 1985 Refunding Series	160,510	48,038	43,959
1988 A Refunding	$ 18,220 of the 1980 Series A $ 18,315 of the 1981 Series A $ 9,110 of the 1982 Refunding Series $ 5,000 of the 1985 Refunding Series $120,890 of the 1985 Refunding Series A	171,535	28,644	28,644
Total		$1,356,295	$ 352,545	$ 231,385

The Authority's bond indentures provide for certain restrictions, the most significant of which are:

The Authority covenants to establish rates and charges adequate to provide revenues sufficient, among other things, to pay debt service when due on the priority obligations and expansion bonds, to make required payments when due into the lease fund and the capital improvement fund, and to pay the costs of operation and maintenance of the Authority's electric system and all necessary repairs, replacements, and renewals thereof.

The Authority is presently required to pay annually into its capital improvement fund an amount which, together with the amounts deposited therein the two preceding fiscal years, is at least equal to 8% of the Authority's gross revenues (as defined) in the three preceding fiscal years. The Authority may issue additional parity expansion bonds if, among other things, the Authority's Consulting Engineer certifies that net revenues (as defined) in each succeeding fiscal year after the date on which such additional bonds are sold to and including the later of (a) the third succeeding full fiscal year after such date or (b) the first full fiscal year after the estimated date of commercial operation of any power plant to pay the cost of construction of which additional expansion bonds have been, are being, or are then authorized to be issued, shall be at least equal to the sum of the amounts required in such fiscal year for (i) debt service on the priority obligations and the expansion bonds then outstanding, being issued, or authorized but not yet issued, (ii) payments into the lease fund, and (iii) payments into the capital improvement fund.

Electric revenue and expansion bonds maturing during the years ending December 31, 1990 through 1994, are as follows:

	Electric Revenue Bonds	Priority Obligations & Expansion Bonds	Total
		(Thousands)	
December 31, 1990	$ 13,500	$ 20,860	$ 34,360
December 31, 1991	13,500	24,155	37,655
December 31, 1992	13,500	26,685	40,185
December 31, 1993	13,500	28,405	41,905
December 31, 1994	13,500	30,205	43,705
Total	$ 67,500	$ 130,310	$ 197,810

Note 5 — Summer Nuclear Station:

The Authority and South Carolina Electric and Gas (SCE&G) are parties to a joint ownership agreement providing that the Authority and SCE&G shall own the Summer Nuclear Station with undivided interest of 33⅓% and 66⅔%, respectively. SCE&G is solely responsible for the design, construction, budgeting, management, operation, maintenance, and decommissioning of the Summer Nuclear Station, and the Authority is obligated to pay its ownership share of all costs relating thereto. The Authority receives 33⅓% of the net electricity generated. At December 31, 1989 and 1988, the plant accounts included approximately $426,423,000 and $426,070,000, respectively, representing the Authority's investment, including capitalized interest, in the Summer Nuclear Station. The Authority's interest in Summer Nuclear Station was financed solely by long-term debt. For the years ended December 31, 1989 and December 31, 1988, the Authority's operation and maintenance expenses included $37,663,000 and $20,473,000 respectively, for operation and maintenance expenses of the Summer Nuclear Station.

Nuclear fuel costs are being amortized based on energy expended which includes a component for estimated disposal costs of spent nuclear fuel. These amortizations are included in fuel expense and are recovered through the Authority's rates. Decommissioning costs (costs to take the plant out of service in the future) for the Summer Nuclear Station are estimated to be $314 million, for the Authority's ⅓ ownership, based on a 30-year useful life with decommissioning expected to commence in the year 2013. The Authority accrues for its share of the estimated decommissioning costs over the remaining life of the facility. These costs are being recovered through the Authority's rates. Beginning in 1990 the Authority will adjust its provision for decommissioning costs as a result of an updated decommissioning plan and revision of the useful life of the station to 40 years.

The supplier under the original uranium supply contract breached the contract in 1975 due to uranium market conditions. SCE&G initiated action seeking specific performance of the contract provisions, and a final settlement was reached and approved by all parties in April 1990. By terms of the settlement, the Authority has received approximately $10,243,000 in cash as partial settlement of the lawsuit. Additionally, the agreement provides for delivery of uranium, long-term deliveries of equipment and services (including conversion and fuel fabrication) at a discount. The cash and discounts received (and related interest earned) which approximated $16,572,000, were recorded as deferred credits. During 1988 deferred credits and related interest of approximately $8,756,000 were used to offset the additional fuel costs associated with replacement energy during the Summer Nuclear Station refueling outage. The remaining deferred credits of $8,049,000 will be used during scheduled refueling outages in future years.

Note 6 — Commercial Paper Notes and Mini-Bonds:

The Board of Directors authorized the issuance of commercial paper not to exceed $100,000,000. The paper is issued for valid corporate purposes with a term not to exceed 270 days at an annual interest rate not to exceed 9½%. As of December 31, 1989 and 1988, the effective interest rate on outstanding borrowings was 6.10% and 6.03%, respectively. During 1989 and 1988, the average amount outstanding was $50,000,000; the average maturity was 35 and 34 days, respectively; the average effective interest rate was 6.60% and 5.33%, respectively.

At December 31, 1989, the Authority had a Revolving Credit Agreement of $100,000,000. This Agreement is used to support the Authority's issuance of commercial paper. Under an agreement signed November 1988, the Authority is required to pay a fee equal to 1/8 of 1% on the total line of credit. No loans were outstanding under the Agreement at December 31, 1989.

In October 1989 and September 1988 the Authority issued $17.4 million 7% Electric System Revenue Bonds 1989 Series M ("1989 Mini-Bonds") and $17 million 7¾% Electric System Revenue Bonds 1988 Series M ("1988 Mini-Bonds") respectively. These Mini-Bonds, which are due on demand of the registered owner, are considered current liabilities of the Authority. The Mini-Bonds are to be paid from and secured by a pledge of revenue on a parity with the 1985 Electric System Revenue Bonds and Commercial Paper Notes, but are junior and subordinate to all other outstanding bonds and capital lease obligations.

Note 7 — Contracts with Central Electric Power Cooperative, Inc.:

The Authority has lease contracts with Central Electric Power Cooperative, Inc., covering a steam electric generating plant, transmission facilities, and various other facilities. The lease terms range from six to twenty-six years. Quarterly lease payments are based on a sum equal to the interest on and principal of Central's indebtedness to the Rural Electrification Administration for funds borrowed to construct the above mentioned facilities. The Authority has an option to purchase the leased properties at any time during the period of the lease agreement for a sum equal to Central's indebtedness remaining outstanding on the property involved at the time the option is exercised or to return the properties at the termination of the lease. The Authority plans to exercise each and every option to acquire ownership of such facilities prior to expiration of the leases.

Future minimum lease payments on Central leases, at December 31, 1989, were:

Years ending December 31:	Amount (Thousands)
1990	$ 5,259
1991	5,259
1992	5,259
1993	5,259
1994	5,240
Thereafter	67,296
Total minimum lease payments	93,572
Less, amounts representing interest	28,863
Balance at December 31, 1989	$ 64,709

Leased property under capitalized leases and related accumulated amortization included in utility plant at December 31, 1989 totalled $102,200,000 and $46,900,000, respectively, and at December 31, 1988 totalled $102,362,000 and $44,120,000, respectively.

Power supply and transmission services are provided to Central in accordance with the Power System Coordination and Integration Agreement dated January 19, 1981, and amended as of March 31, 1988. The amendment provides for a change in the Authority's rate-making methodology for Central. In addition, the Authority will be the sole supplier of Central's energy needs excluding what Central receives from the Southeastern Power Administration and SCE&G. The agreement allows Central to audit all charges by the Authority. Audits for the years ended June 30, 1986 through 1989 were summarized and presented to management in February 1990. The audit items are being reviewed and will be discussed with Central. Management does not believe there will be any material effect to the Authority as a result of these audits.

Note 8 — Commitments and Contingencies:

BUDGET — The Authority's capital budget provides for expenditures of approximately $124,678,000 during the year ending December 31, 1990, and $296,530,000 during the two years thereafter.

FUTURE GENERATION — The Authority's Board of Directors approved the construction of a second 520-megawatt coal-fueled electric generating unit at the Cross Plant with power generation to begin no later than May 1995.

The estimated cost of construction is expected to total approximately $587.7 million which includes $553.4 million for the generating unit, $25.9 million for related transmission facilities, $9.3 million for coal cars and $9.1 million for the initial coal stockpile.

DAM REINFORCEMENT — During 1982, FERC notified the Authority that the Pinopolis West Dam and the Santee North Dam, which form a part of the Authority's electric utility system, possessed marginal seismic stability under applicable design earthquake criteria. FERC indicated that remedial measures should be undertaken by the Authority to provide an increased level of seismic stability.

The preliminary design on the reinforcement of the Pinopolis West Dam was completed by the U.S. Army Corps of Engineers (Corps), and a contract was awarded in April 1988 by the Corps. The construction of the bolster is the responsibility of the Corps and is expected to cost the federal government $26.3 million, including the engineering design. Construction is projected to last three years.

An "Emergency Action Plan" was developed for implementation in the event of a failure of the Santee North Dam. In 1986, FERC tentatively approved the plan with 22 modifications. The Authority agreed to all of the modifications except one regarding "strict liability" which was contested in Federal Court. On July 5, 1988, an order was received from the Federal District Court upholding the Authority's position and remanding the case to FERC. Based on the facts as they currently exist, management believes that any cost incurred by the Authority related to the dams would not materially affect the financial position of the Authority.

COAL PURCHASE COMMITMENTS — The Authority has committed to acquire coal under four long-term contracts with terms extending from 3 to 14 years.

Based on current prices, the coal purchase commitment approximates $1.1 billion. The commitment is subject to certain terms and conditions, including price and tonnage adjustments.

Note 9 — Retirement Plan:

Substantially all Authority full-time employees must participate in the South Carolina Retirement System ("System"), a cost-sharing multiple-employer public employee retirement system. The payroll for employees covered by the System for each of the years ended December 31, 1989 and 1988 was $51,869,000 and $47,286,000, respectively.

Employees who retire at or after age 65 or have 30 years of service are entitled to a retirement benefit, payable monthly for life equal to 1.82 percent of their average final compensation. Benefits fully vest on reaching 5 years of service. Vested employees may retire at 60 and receive reduced retirement benefits. The System also provides death and disability benefits. Benefits are established by State statute.

Employees are required by State statute to contribute 6 percent of salary. The Authority is required by the same statute to contribute 7 percent of total payroll. The contribution requirement for each of the years ended December 31, 1989 and 1988 was $3,780,00 and $3,311,000 from the Authority and $3,112,000 and $2,681,000 from employees.

An actuarial valuation is performed for the System annually. At the most recent valuation date, December 31, 1988, the pension benefit obligation for retired and active members was approximately $7.4 billion. The amortized cost of assets of the System was approximately $5.4 billion. The unfunded pension obligation was approximately $2.0 billion. The pension benefit obligation is a standardized disclosure measure of the present value of pension benefits, adjusted for the effects of projected salary increases, estimated to be payable in the future as a result of employee service to date. The measure, which is an actuarial present value of credited projected benefits, is intended to help users assess the System funding status on a going-concern basis, assess progress made in accumulating sufficient assets to pay benefits when due, and make comparisons among public employee retirement systems. The System does not make separate measurements of assets and benefits payable for individual employers. The Authority's contribution represented approximately two percent of the total contribution to the System.

Ten-year historical trend information showing the System's progress in accumulating sufficient assets to pay benefits when due is presented in the System's June 30, 1988 comprehensive annual financial report.

Note 10 — Major Customers:

Sales to two major customers for the years ended December 31, were:

	1989	1988
	(Thousands)	
Central Electric Power Cooperative, Inc.	$ 221,000	$ 205,155
Alumax of South Carolina, Inc.	$ 82,000	$ 84,000

Alumax of South Carolina, Inc. is entitled to receive, under the contract amendment dated January 1, 1986, rate relief up to $17.6 million per year. The rate reduction is available if the average monthly price of aluminum is $.62 (1986 dollars) per pound or below provided Alumax operates at a specified load. Alumax must begin to repay the rate relief if the price of aluminum is $.72 (1986 dollars) per pound or more. There was no rate relief granted to Alumax under this provision during 1989 and 1988. During January 1990, rate relief was granted in the amount of $1.467 million. At the present time, it cannot be determined if Alumax will continue to receive rate relief during the remainder of 1990.

Note 11 — Storm Damage:

On September 21, 1989, the Authority's system was substantially damaged by Hurricane Hugo. Current cost estimates to repair and replace the Authority's damaged facilities are approximately $21.2 million with approximately $13.0 million representing losses to the Authority's transmission and distribution system, with the remaining costs reflecting damage to other facilities, costs of clearing roads and subdivisions, dam slope protection, and removal of lake obstructions.

Approximately $4.8 million of losses are insured. In addition, anticipated disaster relief assistance from federal and state sources is estimated at $16.1 million. Consequently, unrecoverable costs are estimated to be approximately $300,000. Through December 31, 1989, recoverable repair and rebuilding costs in the amount of $7,328,000 have been capitalized in the other deferred debits account, net of insurance and governmental assistance received totaling $4,710,000.

The Authority's generating facilities and the structural integrity of the dams were not impaired, however, additional dam slope protection is proceeding at an estimated cost of $1 million.

Based on current estimates, the Authority's 1990 budgeted net revenues will decrease approximately $4.2 million as a result of the hurricane.

The Authority does not expect to increase rates due to the impact of Hurricane Hugo and foresees no measurable long-term impact on its operations or the demand for electricity by its customers.

Report of Ernst & Young, Independent Auditors

The Advisory Board and Board of Directors
South Carolina Public Service Authority

We have audited the accompanying balance sheets of the South Carolina Public Service Authority as of December 31, 1989 and 1988, and the related statements of accumulated earnings reinvested in the business, reinvested earnings, and cash flows for the years then ended. These financial statements are the responsibility of the Authority's management. Our responsibility is to express an opinion on these financial statements based on our audits.

We conducted our audits in accordance with generally accepted auditing standards. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by management, as well as evaluating the overall financial statement presentation. We believe that our audits provide a reasonable basis for our opinion.

The financial statements of the South Carolina Public Service Authority are intended to present the financial position and results of operations and cash flows of proprietary fund types of only that portion of the funds and account groups of the State of South Carolina that is attributable to the transactions of the South Carolina Public Service Authority.

In our opinion, the financial statements referred to above present fairly, in all material respects, the financial position of the South Carolina Public Service Authority at December 31, 1989 and 1988, and the results of its operations and its cash flows for the years then ended in conformity with generally accepted accounting principles.

Ernst & Young

Charleston, South Carolina
March 2, 1990

Schedule of Bonds Outstanding

As of December 31, 1989
(in thousands)

Maturity Date July 1	1968 Series		1967 Series		1973 Series		1974 Series		1977 Refunding Series		1977 Series		1978 Series		1979A Series	
	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.
1990	2.70	1,900	4.10	420*	5¼	1,380	6.20	1,505	5.20	3,620	4.80	570	5.05	1,155	5¾	1,195*
1991	2.70	1,950	4.10	440*	5.30	1,455	6¼	1,590	5.30	3,830	4.90	590	5.10	1,220	5.85	1,240*
1992	2.70	2,005	4.10	455*	5.40	1,530	6.30	1,695	5.40	4,035	5.00	625	5.15	1,285	5.90	1,300
1993	2.70	2,060	4.10	480*	5.40	1,615	6.30	1,795	5½	4,260	5.10	660	5.20	1,355	5.95	1,360
1994			4.10	2,605*	5¾	1,700*	6.40	1,910	5.60	4,480	5.20	720	5¼	1,440	6.00	1,425
1995			4.10	2,720*	5¾	1,795*	6.40	2,035	5.65	4,710	5.30	785	5.30	1,515	6.05	1,490
1996			4.10	2,845*	5¾	1,900*	6.40	2,155	5.70	4,995	5.40	830	5.35	1,585	6.10	1,565
1997			4.10	2,975*	5¾	2,010*	6½	2,295	5.70	5,265	5.45	890	5.40	1,670	6.20	1,645
1998			4.10	3,105*	5¾	2,125*	6½	2,435	5⅞	5,590*	5½	935	5.40	1,760	6.30	1,725
1999			4.10	3,245*	5¾	2,245*	6½	2,590	5⅞	5,915*	5½	1,005	5.70	1,850*	6.35	1,815
2000			4.10	3,395*	5¾	2,375*	6¾	2,750*	5⅞	6,275*	5.55	1,065	5.70	1,940*	6.40	1,915
2001			4.10	3,545*	5¾	2,510*	6¾	2,920*	5⅞	6,665*	5.60	1,130	5.70	2,045*	6.45	2,025
2002			4.10	3,705*	5¾	2,655*	6¾	3,110*	5⅞	7,050*	5.60	1,220	5.70	2,145*	6½	2,135
2003			4.10	3,870*	5¾	2,810*	6¾	3,295*	6.00	7,490*	5¾	1,295*	5.70	2,260*	6½	2,260
2004			4.10	4,045*	5¾	2,970*	6¾	3,505*	6.00	7,950*	5¾	1,380*	5.70	2,380*	6¾	2,390*
2005			4.10	4,230*	5¾	3,140*	6¾	3,730*	6.00	8,450*	5¾	1,460*	5.70	2,500*	6¾	2,540*
2006			4.10	4,420*	5¾	3,325*	6¾	3,950*	6.00	8,970*	5¾	1,570*	5.70	2,630*	6¾	2,695*
2007					5¾	3,515*	6¾	4,205*	6.00	9,400*	5¾	1,795*	5.70	7,385*	6¾	2,865*
2008					5¾	3,715*	6¾	4,470*	6.00	9,950*	5¾	1,945*	5.70	7,845*	6¾	3,010*
2009					5¾	3,930*	6¾	4,745*	6.00	10,565*	5¾	2,080*	5⅞	8,330*	6¾	3,160*
2010					5¾	4,155*	6¾	5,045*	6.00	11,210*	5¾	2,225*	5⅞	8,845*	6⅞	3,335*
2011					5¾	11,520*	6¾	5,350*	6.00	4,980*	5¾	2,180*	5⅞	9,390*	6⅞	3,525*
2012					5¾	12,180*	6¾	5,695*	6.00	5,315*	5¾	2,300*	5⅞	9,980*	6⅞	3,720*
2013					5¾	12,880*	6¾	6,045*	6.00	5,625*	5¾	2,500*	5⅞	10,590*	6⅞	3,925*
2014							6¾	20,045*	6.00	6,010*	5¾	2,640*	5⅞	11,250*	6⅞	4,140*
2015									6.00	9,515*	5¾	21,065*	5⅞	11,950*	6⅞	4,370*
2016									6.00	11,285*	5¾	21,235*	5⅞	12,555*	6⅞	4,610*
2017											5¾	34,580*	5⅞	13,190*	6⅞	4,870*
2018													5⅞	50,600*	6⅞	5,135*
2019															6⅞	25,550*
2020																
2021																
2022																
Total Outstanding	7,915		46,500		89,435		98,865		183,405		111,275		192,645		102,935	
Bonds Redeemed to 12-31-89	7,385		5,100		10,565		10,135		31,745		3,725		7,355		7,065	
Bonds Refunded to 12-31-89	0		0		0		0		0		0		0		0	
Original Issue Amt.	15,300		51,600		100,000		109,000		215,150		115,000		200,000		110,000	

*Term Bonds

See Schedule of Refunded Bonds.

1980A Series		1981A Series		1981C Series		1982A Series		1983B Series		1982 Refunding Series		1985 Refunding Series		1985 Series		1985A Refunding Series		1986A&B Refunding Series		1986C&D Refunding Series		1987A Refunding Series		1988M Mini-Bond Series		1988A Refunding Series		1989M Mini-Bond Series		Total Principal Maturities	Calendar Year Interest Accruals	Total Debt Service
Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.			
9.20	1,130	8.30	940	11½	1,070	11½	1,905	10¾	940	8.00	545	7¼	525	7.40	13,500	7.00	380					5¼	830	4.60	850							34,360	131,144	165,504
9¼	1,235	8.45	1,050	11¾	1,185	11¾	2,105	11.00	1,060	8.20	585	7½	565	7.70	13,500	7¼	410	6¾	1,890	5.40	875	4.80	880							37,655	128,599	166,254
9.30	1,350	8.60	1,165					11¼	1,195	8.40	635	7¾	605	8.00	13,500	7½	440	7.00	5,665	5.60	925	5.00	930			7.00	845			40,185	125,859	166,044
9.40	1,475	8¾	1,295							8.60	690	8.00	650	8.20	13,500	7¾	470	7.15	7,380	5.80	975	5.90	975			7.00	910			41,905	123,014	164,919
9.45	1,615	8.90	1,435							8¾	750	8.20	705	8.40	13,500	8.00	510	7.30	7,890	6.00	1,030	5.90	1,025			7.00	965			43,705	120,000	163,705
9½	1,765	9.00	1,600									8.40	765	8.70	13,500	8.20	2,425	7.40	6,580	6.20	1,095	5.90	1,080			7.00	1,840			45,700	116,780	162,480
		9.15	1,775									8.60	825			8.40	2,030	7½	7,645	6.40	1,160	5.90	1,140			7.00	3,695			34,345	113,987	148,332
		9.30	1,970									8.80	900			8.60	2,390	7.60	7,995	6.60	1,235	6.00	1,205			7.00	4,155			36,600	111,631	148,231
												9.00	1,060			8.70	4,980	7.70	5,925	6.70	1,320	6.10	1,280			7.10	6,635			38,875	109,100	147,975
												9.05	1,160			8¾	5,405	7.80	6,365	6.80	1,400	6¼	1,350			7.20	7,110			41,455	106,383	147,838
												9.10	1,150			9.00	11,020*	7.80	13,200	6.90	1,505	6.40	1,435			7.30	7,650			44,655	103,648	148,123
																9.00	6,090*	7.90	835	7.00	1,605	6½	2,675			7.40	8,220			45,395	100,386	145,781
																9.00	15,390*	7.90	900	7.05	1,715	6½	4,280			7.40	13,520			48,525	97,170	145,695
																		8.00	4,695	7.10	3,510	6.60	4,575	7¾	16,944	7.50	330			68,724	93,036	161,760
																		8.00	5,070	7.10	4,920	6¾	20,390			7.50	365	7.00	17,471	72,836	96,200	169,036
																		8.00	5,475	7.10	5,265	6¾	16,795			7.60	5,385			58,970	84,113	143,083
																		8.00	5,910	7.20	5,625	6¾	2,360			7¾	320*			41,765	80,850	122,615
																		8.10	6,390	7.20	6,000	6¾	2,525			7¾	340*			44,420	78,063	122,483
																		8.10	6,905	7.00	6,415*	6⅞	2,715*			7¾	365*			47,335	75,057	122,392
																		8.00	7,465*	7.00	6,850*	6⅞	2,925*			7¾	395*			50,445	71,853	122,298
																		8.00	8,060*	7.00	7,310*	6⅞	3,140*			7¾	420*			53,745	68,431	122,176
																		8.00	10,480*	7.00	6,025*	6⅞	3,380*			7¾	460*			57,290	64,779	122,069
																		8.00	11,315*	7.00	6,430*	6⅞	3,625*			7¾	490*			61,050	60,884	121,934
																		8.00	12,230*	7.30	6,870*	6.90	3,880*			7¾	525*			65,070	56,718	121,788
																		8.00	2,095*	7.30	7,915*	6.90	4,150*			7¾	7,315*			65,560	52,358	117,918
																		8.00	2,260*	7.30	8,145*	6.90	4,465*			7¾	8,210*			69,980	47,901	117,881
																		8.00	2,445*	7.30	20,430*	6.90	4,785*			7⅞	420*			77,765	43,148	120,913
																		8.00	2,625*	7.30	21,875*	6.90	5,160*			7⅞	450*			82,750	37,998	120,748
																		8.00	2,850*	7.30	23,425*	6.90	5,575*			7⅞	495*			88,080	32,506	120,586
																		8.00	3,740*	7.30	25,080*	6.90	6,030*			7⅞	30,040*			90,440	26,328	116,768
																		7.00	23,675*	7.30	27,005*	6.90	6,520*			7⅞	39,825*			97,025	19,387	116,412
																				7.30	56,985*	6.90	7,040*			7⅞	36,680*			100,705	12,012	112,717
																				6¾	62,325*	7.00	61,025*							123,350	4,122	127,472
8,570	11,230	2,255	4,010	3,195	3,205	8,910	81,000	51,940		195,955		334,075		190,355		16,944		188,575		17,471		1,950,665		2,593,265		4,543,930					
5,485	3,455	3,325	6,170	2,795	1,410	1,795	54,000	5,015		0		1,555		2,305		68		0		0		170,453									
60,945	60,315	144,420	154,820	159,010	289,385	165,510	0	120,890		0		0		0		0		0		0		1,155,295									
75,000	75,000	150,000	165,000	165,000	294,000	176,215	135,000	177,845		195,955		335,630		192,660		17,012		188,575		17,471		3,276,413									

Schedule of Refunded Bonds

As of December 31, 1989
(in thousands)

Series	Series 80A		Series 81A		Series 81B		Series 81C		Series 82A		Series 82B		Series 82 Ref.		Series 85 Ref.		Series 85A Ref.	
Call Date	July 1, 1990		July 1, 1991		July 1, 1991		July 1, 1991		July 1, 1991		July 1, 1992		July 1, 1992		July 1, 1995		July 1, 1995	
Original Maturity Date	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.	Int. Rate	Amt.
1990																		
1991																		
1992							12.00	1,315	12.00	2,335								
1993							12.25	1,470	12.30	2,590	11.60	1,345						
1994							12.50	1,635	12.60	2,895	11.90	1,515						
1995					11.00	3,090					12.10	1,815						
1996					11.10	4,000					12.20	2,040						
1997					11.20	4,220					12.30	2,295						
1998					11.30	4,590												
1999					11.40	5,090												
2000					11.50	12,010												
2001							13.25	20,000*										
2002	9.80	18,220*	9.75	18,315*									9.375	9,110*				
2003									13.75	20,000*								
2004																		
2005											12.75	40,000*			9.375	5,000*		
2006																		
2007																		
2008																		
2009																		
2010	10.25	42,725*																
2011																		
2012													9.60	37,235*				
2013					9.25	28,000*												
2014																		
2015							10.00	20,000*										
2016																		
2017																		
2018																		
2019																		
2020			10.25	42,000*	12.00	89,000*												
2021					10.50	50,000*	13.75	100,000*									9.20	120,890*
2022									14.125	127,000*	13.00	110,000*	9.70	243,040*	9.50	160,510*		
Totals Per Series		60,945		60,315		200,000		144,420		154,820		159,010		289,385		165,510		120,890
Totals Per Call Date		60,945				569,555						448,395				286,400		

*Term Bonds

Applications of Revenue

*Calendar Years 1989 and 1988 (in thousands)**	*1989*	*1988*
Total Operating Revenues	**$554,794**	$504,948
Operating Expenses:		
Operation		
Production	**248,231**	214,935
Purchased and Interchanged Power - Net	**8,007**	1,741
Transmission	**2,375**	2,529
Distribution	**2,696**	3,529
Customer Accounts	**3,531**	3,450
Sales	**735**	493
Administrative and General	**38,873**	33,089
Maintenance	**37,561**	35,343
Total Operation and Maintenance Expenses	**342,009**	295,109
Sums in Lieu of Taxes	**2,058**	1,876
Total Operating Expenses	**344,067**	296,985
Net Operating Revenues	**210,727**	207,963
Other Income	**24,420**	25,173
Revenue Available for Debt Service and Other Purposes	**235,147**	233,136
Total Debt Service	**144,433**	145,329
Lease Payments (and other obligations)	**31,018**	30,056
Balance After Debt Service, Lease Payments, and Other Obligations	**59,696**	57,751
Payments to the State of South Carolina	**5,366**	4,091
Payment to the Special Reserve Fund	**5,366**	4,091
Mandatory 8% Allocation for Capital Improvements	**39,587**	28,794
Revenue Available for Operating Requirements	**$9,377**	$20,775

*This summary has been prepared from the financial statements and other data of the Authority and has not been examined by the independent auditors. This summary presents the net revenues available to the Revenue Fund for purposes such as providing for increases in working capital requirements. It differs from the Statement of Reinvested Earnings in that it represents cash transactions on debt service and, accordingly, excludes non-cash items such as depreciation, costs to be recovered for future revenue, and amortization of debt discount and expense.

Advisory Board

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Corporate Communications Director

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